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**MONSTER MAKEOVER
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**56 MPH
TRAXXAS
JATO**

REINVENTING
THE STADIUM
TRUCK

**20 PHOTOS
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**EASY
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RCX

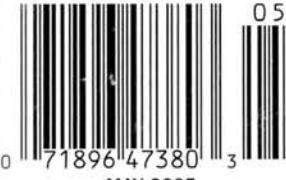
**PREVIEW THE
WORLD'S
BEST RC
EXPO**
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» KYOSHO GIGA CRUSHER » HPI NITRO MT2 SS » HITEC TG SERVOS**

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MAY 2005

RADIO CONTROL car action

VOLUME 20 ■ NUMBER 5 ■ MAY 2005

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COVER STARS: that's the Traxxas Jato tearin' it up in Photoshop, with studio magic by Pete Hall. Meanwhile, the Team Losi Triple-XS Sport II, Tamiya TB Evo 4, Kyosho Giga Crusher and HPI MT2 18SS roll out "for real." Pics by Deron Neblett and Pete Hall.



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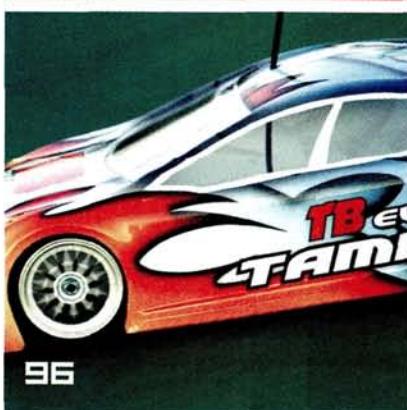
Hitec TG-Series titanium-gear servos » BY PETER VIEIRA

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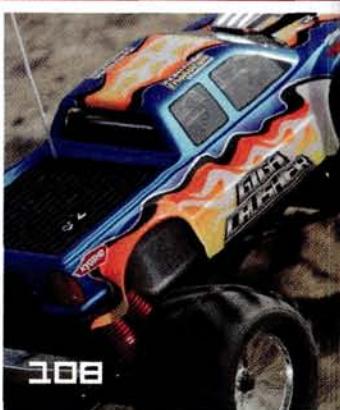
On your mark, get set, wrench! » BY PETE VIEIRA

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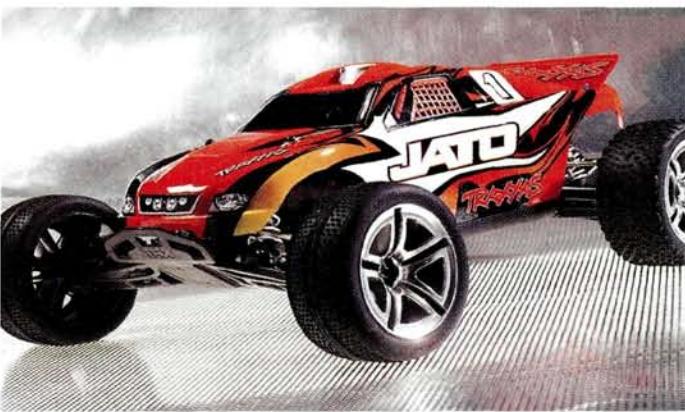


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Break the Rules!

SINCE YOU'RE READING THIS NOW, I'll assume you've already read the Traxxas Jato story (if you're reading this first, it means you're either my mom, or you're obsessed with me—

which also points to you being my mom). I'd read the Jato story first, too; when a vehicle comes along that so completely challenges the standard in its category, who doesn't want that story?

I hate to use the cliché "thinking outside the box," but that's exactly the sort of thinking the Traxxas techs did when they started CADing and CAMing the Jato into existence. And although the Jato's unique design has certainly caught the attention of racers, the irony is that racers seem to want Traxxas to get back inside the standard-issue stadium truck box. "The Jato should come with a .12 and a single-speed so it's ROAR-legal," they say. And, of course, the notion of electric starting is totally off the table, if not for rules reasons then for "performance purity," to coin a term. In answer to that, I say: break the rules—at least at your local track, and especially if there's a bunch of RTR guys who run the track for fun but stay away on race day because they don't want to swap the .15 engine out of their truck for a "legal" .12. Give these guys a class and let them race. If they all show up with Jatos, you could even have a Le Mans start. Sprint to the truck, jam in the starter, press the button and peel out! I'd like to see that. Jato-tech also speaks to racing in a bigger-picture way. Isn't racing supposed to be the ultimate technology jump-starter, the perfect breeding ground for innovation? And if it is, how is it that Traxxas has developed such an innovative truck when it has emphatically stayed out of racing? Maybe it's time for ROAR and the other sanctioning bodies to loosen up. I'm not talking about overhauling the classes in one fell swoop, but surely there could be separate "open" classes that are lighter on restrictions and encourage that elusive outside-the-box thinking. Wouldn't you like to see racing do something more interesting for car design than, say, lowering the transmission 2mm or delivering a new camber-link position? I want to see RC technology leaps that rival such full-scale racing shockers as the Chapparal 2J "sucker" car and the STP turbine car (Google 'em; they're wild). At the very least, we'll see some exciting ideas go fast or flame out. At the very best, we'll see new technology trickle down to us "regular RC guys" that might make our hobby faster, more affordable, or more fun. Or all three.

Peter Vieira
Executive Editor

In this issue

PROJECT: RACE LST

Will the Losi Super Truck prove super on the track? John Howell mixes up a mess of mods to find out.

CHARGE IT!

We've collected all the latest pro-level chargers to help you pick the perfect pack power-upper. From APS to Tekin (yes, Tekin!), they're all in our Pro Charger Guide. Dare to compare.

RACING SPEED-CONTROL INSTALL

Hey battery boy, ready for the big time? We show you how to put away plugs and get the pro-style hookup with an easy 3-wire speedo install.

FACT, NOT FICTION!

Racing legend Joel Johnson separates reality from "everybody knows" His answers may surprise you!

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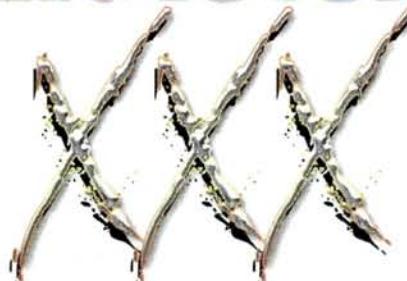
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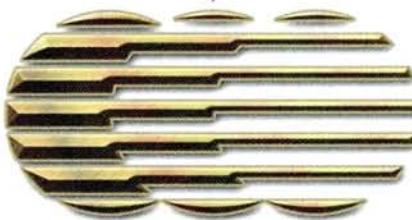
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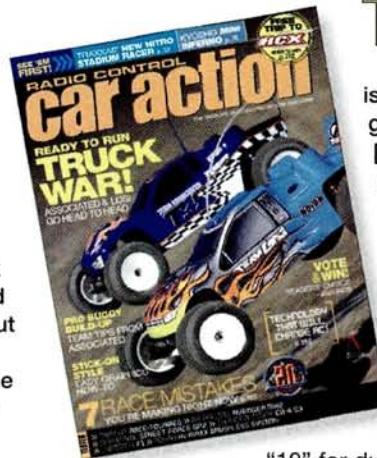
is very important. Why did you get rid of the durability factor? [email]

Ethan Simonton
elroy24@comcast.net

We got rid of the durability rating because it's nearly impossible to accurately assess just how durable a car or truck will be for most users. If it doesn't break, does that mean it deserves a

"10" for durability, or was the driver just too easy on the vehicle? Suppose the driver is overly hard on the car, and he breaks it by subjecting it to severe abuse over and above what a buyer might give it. Does that mean it deserves a poor durability rating? How do you determine whether a durability problem represents a chronic weakness, or a (literally) unlucky break? With those questions in mind, we decided not to rate durability, but that doesn't mean we won't discuss it. For sure, if we encounter a durability problem, we'll write about it, and if a car withstands some gnarly hits during testing, we'll tell you about that, too. But rating it is just too sketchy for us.

—Pete



Head-to-Head Heat

Regarding the truck competition in the April issue: as racing trucks, the deciding factor should be track performance. You said some nice things about the Losi truck, and it deserved them, but the T4 is the clear winner. [email]

Mike Lavenport

I would take the Triple-XT over the T4 any day. It has a way-better radio and better parts, and I would put a faster motor in either truck anyway, so I don't care if the T4 was a little faster out of the box.

[email]

David

Nice job on the Head-to-Head article with the RTR Losi and Associated trucks, but what about the DuraTrax Evader ST (especially the new Pro model) and the XTM X-Cellerator? I suppose you could put a Traxxas Rustler in that fight, too, but it would really be outclassed. [email]

Joe

Thanks for weighing in, guys. Mike, I'd agree with you more if Associated and Losi spec'd the trucks out for racing, but by installing reversing speed controls and non-competition motors, I see these trucks as "sport" models more than pure racers, despite their racing heritage (Losi even puts "Sport" right in the name of the vehicle). Joe, those trucks are certainly worthy contenders, but we wanted to focus on the Associated-vs.-Losi "grudge factor." —Pete

Dura-Bull

I noticed in last month's issue and the month before that you guys have started doing different ratings on your test drives than last year! At first I thought, "cool," but then I looked over the new rating system and saw that you guys don't rate cars on their durability anymore. I think that rating a car or truck on its durability

Try Six

I just finished reading through another great issue of *Car Action*. You guys do a great job. Here is my question: I have a Hitec EZX-R speed control that I ran in my HPI Micro RS4. Now I am wanting to put this in my Tamiya TLT-1. In the RS4, I was using 4 AA batteries. Will this work in my TLT-1 without ruining my speed control? I've used a 6-cell pack, but it's very heavy, so I thought 4 cells would be lighter. Thanks for your help. [email]

Erik Evans

It won't hurt the speed control, but I think you'll like the TLT-1 better on 6 cells. The extra power more than makes up for the extra weight.

—Pete

WE WANT TO
HEAR
FROM YOU!

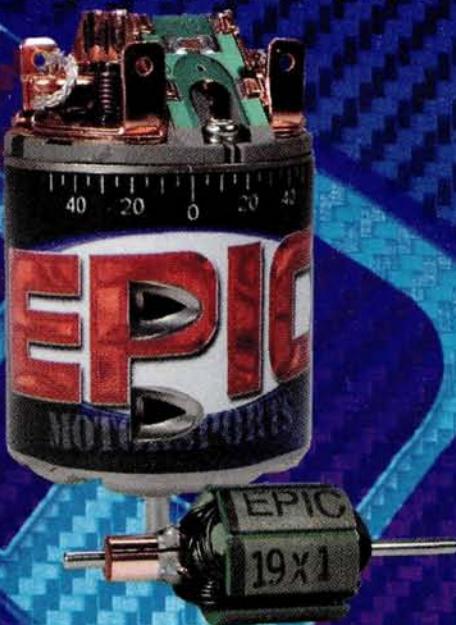


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Much More Maxx

I was looking at "RC Articles" at rccaraction.com and could not find anything about the T-Maxx, but you have stuff on the Savage, Juggernaut, Twin Force, etc. I thought the T-Maxx was the best-selling truck ever, but I see no love for the T-Maxx. Can you help me out?

[email]

James D.

Palm Bay, FL

"RC Articles" only shows the articles that are online, not everything we've done in print. Believe me, we've done a TON of Maxx articles in addition to our regular "Maxx Overdrive" column. Instead of going to "RC Articles," click on the "Back Issues" link and search for "Maxx."

—Pete

Revo vs. Monster GT

My son, son-in-law and I are shopping for monster trucks. We want one that will require the least amount of maintenance. We are looking at the Revo and Team Associated Monster GT. The GT

looks like everything is out in the open and easy to work on. The Revo looks like it would be harder to work on. One shop said the Revo is more durable. The other shop said the GT is the way to go. I am new at this, so I would like a durable truck to start with. Any suggestions as to which truck to go with? We are also starting our track and have it about 90 percent completed. [email]

Cliff Pendell

Benton City, WA

The Revo is actually as easy to wrench on, if not easier, than other monsters, despite its complex appearance. It also needs little maintenance, thanks to its rubber-sealed bearings, suspension pivots, driveshafts and electronics bays. The Monster GT also scores highly for durability and ease of maintenance, according to our 4X4 guy, Kevin Hetmanski. I like the Revo for its onboard electric starting and high gee-whiz factor, but I don't think there's a wrong pick here, Cliff; go with the truck that excites you most.

—Pete

YOU SAID IT

"The hobby is more rewarding when the vehicle is built by the owner"

I have recently returned to the hobby (my last cars were an Ultima, a Grasshopper and a Hornet). Although my hiatus has been long, I have returned to the number-one RC magazine and resubscribed. I've noticed a large selection of ready-to-runs and am somewhat disappointed, as I believe the hobby is more rewarding when the vehicle is built by the owner. Too many times I have seen the local guy drop his money on the quick-fix RTR in the hobby shop just to lose interest shortly after. I am old-school and wonder where the days of custom six-wheel Clods and scratch-built trailers have gone. It seems that now everyone just slaps on an aluminum aftermarket part and calls it custom. I will have to satisfy myself by building my new-in-the-box Clod Buster, Double Dare (old-school) and Juggernaut 2. Now that will be rewarding. Here's to the best RC magazine and the great technological future of RC! [email]

Christopher Gilmour

P.S. I recently obtained the first issue of RC Car Action on eBay ... now that's dedication. Bruiser coming soon

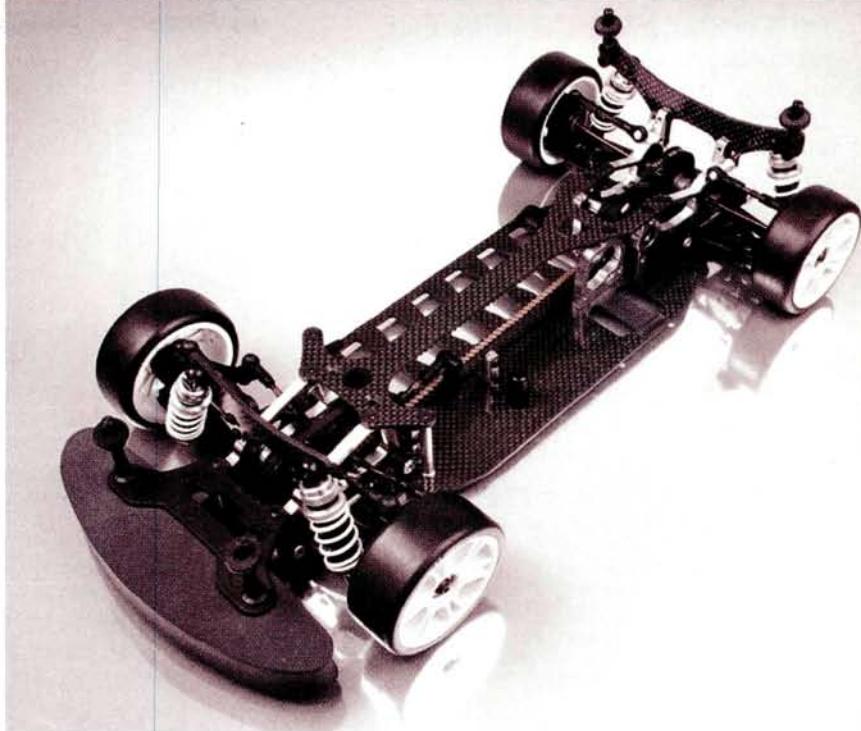
RTRs have been a huge boon to the RC biz, but I think kits are still vitally important and provide the real RC satisfaction that turns newcomers into lifers. I'll keep banging the "you oughta try a kit" drum as long as I keep getting letters like yours, Chris! Any chance you'll run a new-school Reference body on one of your old-school rides?

Every month, "Readers Write" sponsor Team Trinity awards the "You said it" letter writer the Reference body of his choice. This is the Traxxas Stampede truck.



XRAY T1FK'05

Team XRAY will soon release the fifth generation of the T1 competition electric touring car—the T1FK'05. This state-of-the-art machine features an entirely new chassis configuration that improves performance and increases the range of adjustments for more tuning options, so the car is more user-friendly. One of its most notable features is its battery configuration and position—a 6-cell pack (instead of a saddle pack) mounted on the right side of the car. New features are listed below. Since it's a T1, it's got all the high-end XRAY components you'd expect to see.

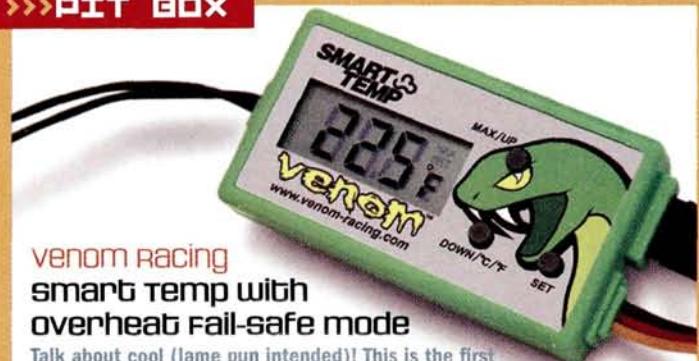


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Venom Racing (800) 705-0620; venom-racing.com.

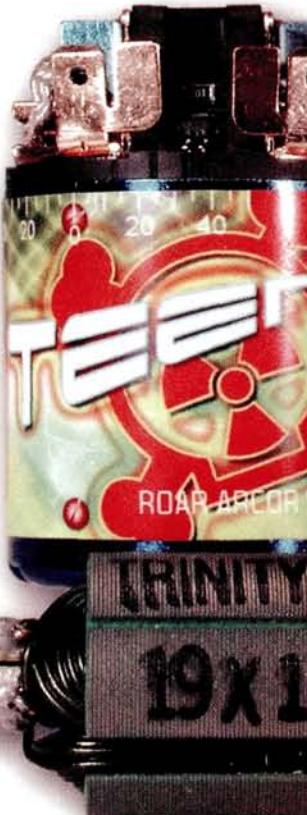
POWER ZONE

Trinity cobalt 9teen
spec modified

If you dig spec-class racing and are looking for a potent 19-turn, Trinity's new Cobalt 9teen Spec motor will be right up your alley. The motor uses the same technology as Ralph Burch used to dominate the 2005 Novak U.S. Indoor Championships, and it meets all current ROAR and ARCOR rules. Using the new Cobalt spec tear-down, this motor features:

an epoxy-balanced, hand-wound armature with a diamond-trued commutator; the thinnest web armature allowed by rules for the highest rpm; high-performance 4383 silver brushes; dual ball bearings; adjustable timing; and factory installed capacitors. Last, but certainly not least, it has been dyno-tuned and tweaked for maximum performance.

Trinity Picco; distributed by Trinity Products (732) 635-1600; teamtrinity.com.

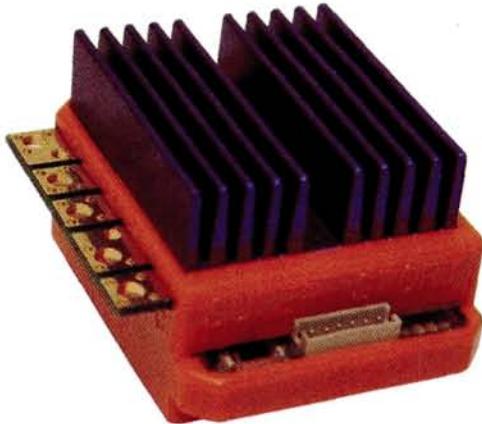


INDUSTRY SCOOP

Novak Electronics super sport plus programmable ESC

Novak Electronics now brings programmability to its line of brushless speed controls. The new Super Sport Plus programmable ESC can be used with brushless (including Novak's SS4300 and SS5800 brushless motors) and brushed motors (down to a 12-turn). Like all current Novak speedos, the new SSP is programmable through the ESC's One-Touch button.

Novak Electronics Inc. (949) 833-8873; teamnovak.com.



JConcepts triple-XT MF2 Illuzion body

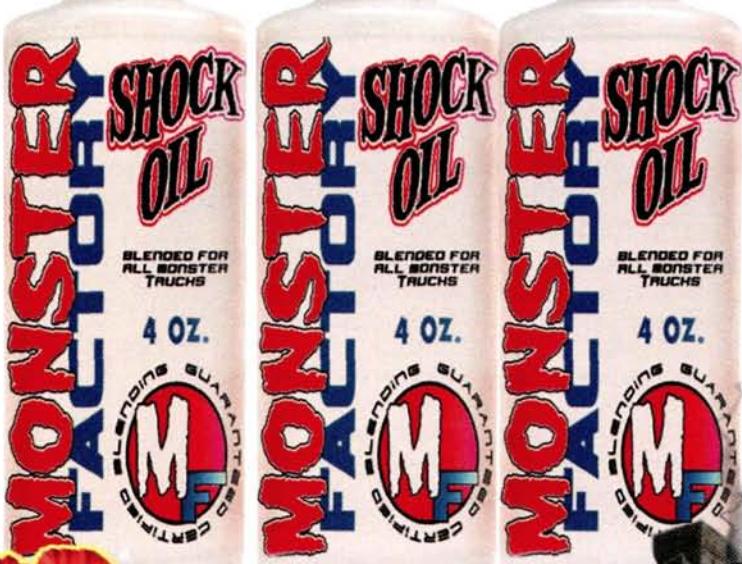
The MF2 Illuzion is a direct fit for all Team Losi XXX-T trucks. This durable, 0.030-inch-thick polycarbonate body comes complete with window mask (with added masks for headlight and grill), headlight and grill decals, a spoiler and spoiler-mounting hardware. The spoiler position is marked on rear of the body with trim lines for application. The MF2 Illuzion features advanced hard-edge styling with an ultra-narrow and low overall stance. The roof of the body has been dramatically wedged, or as JConcepts calls it, "Illuzionized," for that aggressive look. The rear of the body also has a deep inlay that provides a specific spoiler-mounting area. The rear spoiler has angles molded in for added racing stability.

JConcepts (352) 243-5904 (fax only); jconcepts.net.

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Psycho-Tek; distributed by Art's Hobby (734) 455-1927; arts-hobby.com.



Hardcore Racing Ti parts for kyosho 777

Hardcore Racing has long been at the forefront of the Ti upgrade business. If you own a Kyosho 777 1/8-scale buggy, you have to check out all the swag Hardcore Racing makes for it! It offers a full Ti chassis, shock towers, steering knuckles, a radio tray, brake disc and calipers and all sorts of braces. Very trick stuff indeed ...

Hardcore Racing Components (661) 294-5032; racinghardcore.com.



POWER ZONE

TSaIs TW .12 Turbo engine

TsaIs has expanded its line of TW .12s with the release of this 3-port, rear-exhaust, SG-shaft, ROAR-legal, turbo mill. Among its features are true ABC construction, a 12mm competition ported crank, a knife-edged conrod and a high-performance aluminum slide carb. It also comes with an oversize two-piece turbo head and a turbo plug. It looks pretty slick; we can't wait to get our hands on one to try it out! When we get more dirt and horsepower figures, we'll pass the info along.

TsaIs; distributed by RCHub.com (816) 224-2070; rchub.com.

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Team Orion incorporated its V-Max Plus RDS battery-matching technology in its new GP1100 Micro matched battery packs. The V-Max Plus RDS matched batteries feature a high discharge rate and are matched to deliver maximum power output and efficiency for competition micro racing and mini off-road applications. Each individually packaged cell is labeled with actual discharge time, average voltage, internal resistance, total energy and a serial identification number. Team Orion also offers an unmatched version for enthusiasts who want the GP1100 power advantage but are watching their budgets.

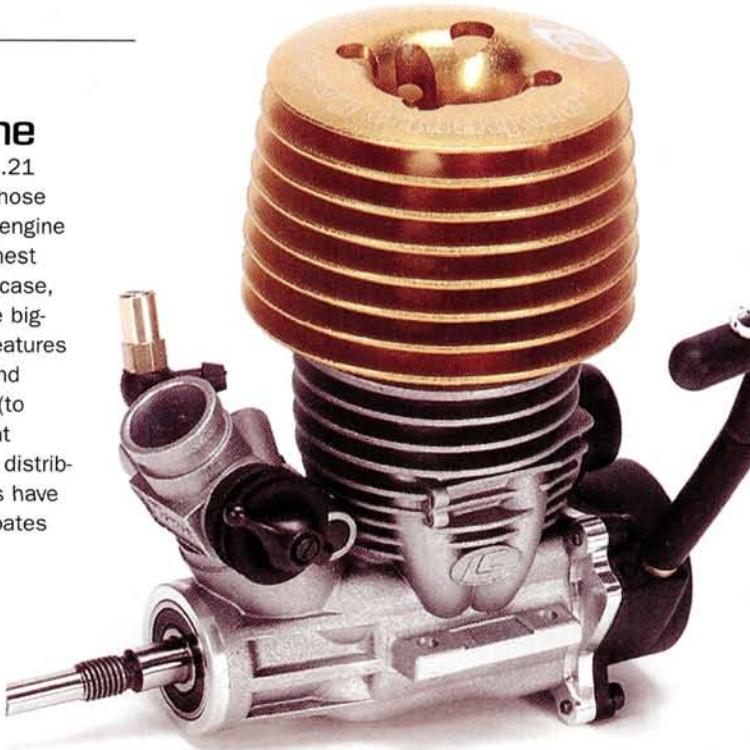
Team Orion Inc. (714) 694-2812; team-orion.com.



Collari LC30MT engine

Remember back in the day when a .21 was considered a big-block? Well, those days are over. This new .30 Collari engine is honkin' big! It's currently the highest displacement engine in a big-block case, and it's designed to be the ultimate big-block swap for monster trucks. It features a 5-port, ABC-construction piston and sleeve with a strengthened conrod (to handle the additional load of all that horsepower!). According to Collari's distributor, Werks Racing, official numbers have not yet been released, but it anticipates that they will exceed 3hp!

Werks Racing (408) 365-1000; werksracing.com.



>>>PIT BOX



Factory Team Ride-height gauge

This Factory Team ride-height gauge allows you to take the guesswork out of properly setting your ride height on your off-road truck or buggy (it also works on 1/8-scale on-road and off-road kits). The tool is made of blue acrylic and fits easily in most pit boxes. Factory Team; distributed by Team Associated (714) 850-9342; teamassociated.com.



Tsais T-BONZ CV drive-shafts for Revo

These new T-Bonz CV driveshafts are precision-machined from alloy steel, hardened for strength and finished with a black oxide rust-preventive coating. According to Tsais, they have near zero backlash and provide smooth, strong acceleration throughout the full range of suspension movement. They also feature rubber dustproof boots to minimize wear and tear caused by dirt and debris.

TSais; distributed by RCHub.com (816) 224-2070; rchub.com.



TRC 2K4 touring car foam tires

Thank you; thank you; thank you! Yes; we're that excited about the idea of having race-worthy foam tires not mounted on white, dish rims. TRC's new 2K4 tires use Italian-made, high-quality GRP foam and come mounted on very cool, BBS-style black rims. These pairs of tires are available in 20 compounds that range from a super-soft 25-shore rating to chip-a-tooth-firm 55-shore. TRC offers three of those compounds in front-only sets and includes adhesive tire-saver rings with every pair. TRC (732) 635-1600; teamtrinity.com.

SMC Racing IB 3600 batteries

There has been quite a bit of buzz in the battery world lately. New cells are being released all the time, and capacity and voltage levels are reaching heights we never would have dreamed of just a few short years ago. SMC now adds to all the hoopla with

the new Intellect Battery (IB) 3600 cells. According to SMC, IB has been in the battery business for nearly eight years producing high-tech Li-Ion and Li-poly batteries, and now it's taking on the NiMH market. Team test drivers say the new cells have tons of punch, power and capacity, and SMC claims that the new cells have lower internal resistance than any other sub-C it tested.

SMC Racing (540) 298-7706; smc-racing.com.



Team Losi

LST Racer body and new wheels

Team Losi brings LST owners a couple of new items to dress up their mighty beasts! The new Racer body has been aerodynamically styled and designed to give the truck a more low-profile racing "edge." A full set of decals and window masks are included for customizing your truck's look.

Losi also has a couple of new wheels for the truck. The 5-spoke Magneto wheels are definitely pimpin', and the new bead locks (actually, pseudo bead locks) come with very sweet-looking blue-anodized aluminum bead-lock rings.

Team Losi; distributed by Horizon Hobby Inc. (800) 338-4639; teamlosi.com; horizonhobby.com.

Traxxas Revo upgrades

Revo owners will be happy to hear that Traxxas now has a few hop-ups for its new monster.

>> Pushrods: these lightweight 7075 T6 aluminum pushrods decrease the Revo's overall weight by 31 grams, and the red aluminum gives the truck a very cool look. The pushrods come with the rod ends installed, so they're a simple bolt-on item. They come in two sizes so they fit Progressive-1 and Progressive-3 rockers.



>> Revo SportTraxx tires: the track-proven SportTraxx tread design is now available in a low-profile size to fit the Revo's 3.8-inch standard wheels. The directional tread pattern has aggressive, multi-angled square spikes that provide many sharp, gripping edges. Combine that with a soft rubber compound, and you have a tire that gives your Revo a high level of traction on just about any track surface. Swap out the stockers with these new tires and save 124 grams of total weight!



>> Hurricane wheels: the new, 5-spoke, low-profile Hurricane wheels feature a unique horizontal bead that helps hold the tire and reduces stress on the glue joint caused by tire expansion. The tire bead also features a natural finish (no chrome plating) for fast, easy, and more secure tire gluing.



>> 40mm aluminum flywheel: this lightweight, silver-anodized, machined-aluminum flywheel is 40mm in diameter, and that makes it perfect for use with a starter box. The pattern on the edge is specially cut to increase traction against starter-box wheels. You can use the flywheel with small- and big-block engines. Traxxas Corp. (972) 265-8000; traxxas.com.

KO PROPO VFS-1 PRO and VFS-1 J ESCs

For the longest time, KO's ESCs were available only in Japan. Well, its new VFS-1 Pro and VFS-1 J ESCs are now available here in the U.S. Both units feature a small footprint (28x25x14.4mm) and 32 throttle steps with 64 frequency settings (0.9 to 12KHz) for each throttle step, and they have a maximum peak current of 3120 amps (FET specs), maximum continuous current 780 amps (FET specs) and a weight of 18.8 grams. Other features include a neutral brake, adjustable brake frequency, BEC voltage setting (2.5 to 4 volts), adjustable throttle response and a current limiter. To program these features, new software and a setting card are also available. The Pro version comes with the BEC factory default setting at 2.5 volts, and the J version is set at 3.5 volts. The Pro version includes 12-gauge wire unassembled, and the J version includes 15-gauge wire assembled. Otherwise, the specs for the two are identical.

KO Propo USA Inc. (310) 532-9355; kopropo.com.

PRO-LINE NEW RACING GEAR

» **Preglued buggy tires.** Pro-Line Racing has expanded its extensive lineup of $\frac{1}{8}$ -scale pregloved tires. The new premounted $\frac{1}{8}$ -scale tires are available on white Velocity dish wheels in the following tire tread/compound options: Crime Fighter XTR and M2, Mugshot XTR and M2, Knuckles XTR and M2, Knuckles 2.0 M2 and Badlands XTR. All premounted versions come complete with Pro-Line firm inserts.

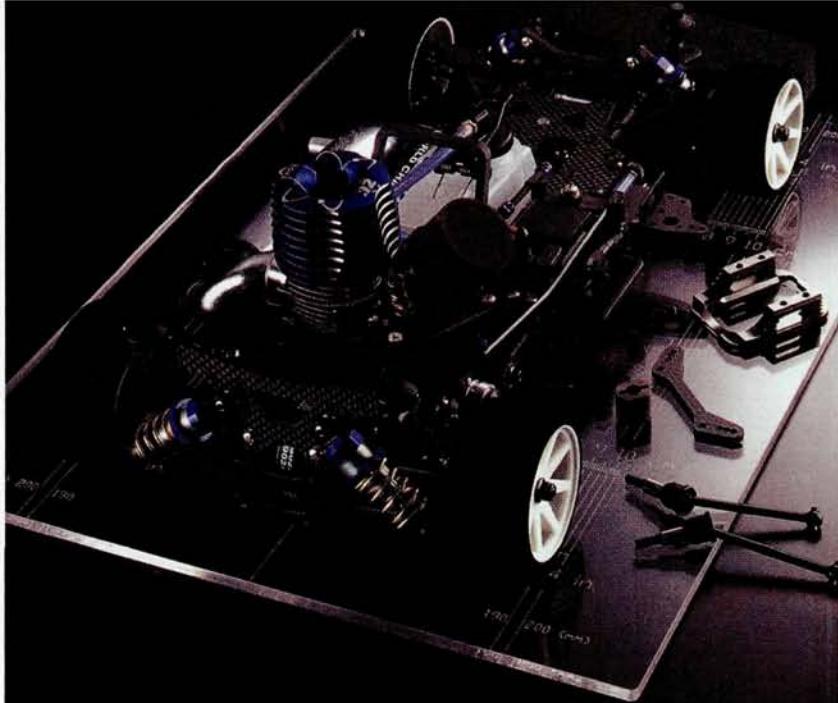


» **40 Series 23mm HD Cheyenne Weld Wheel.** Pro-Line Racing has added another fully licensed Weld Wheel to its lineup; the new 40 Series 23mm HD Cheyenne. The 8-spoke wheels come with an ultrasmooth chrome finish, and according to Pro-Line, they are extremely tough yet very light-weight. The wheels exclusively use Pro-Line's new 23mm HD hexes (which are sold separately).



» **Aluminum wheel wrenches.** These sweet-looking 6061 aluminum wrenches from Pro-Line Racing are available in 17mm and 23mm sizes. The 17mm wrench is made to fit most popular $\frac{1}{8}$ -scale buggies wheels, while the 23mm wrench is designed to fit Pro-Line's new 23mm HD wheels.

Pro-Line (909) 849-9781; pro-lineracing.com.



KYOSHO V-ONE RRR WC TEAM EDITION

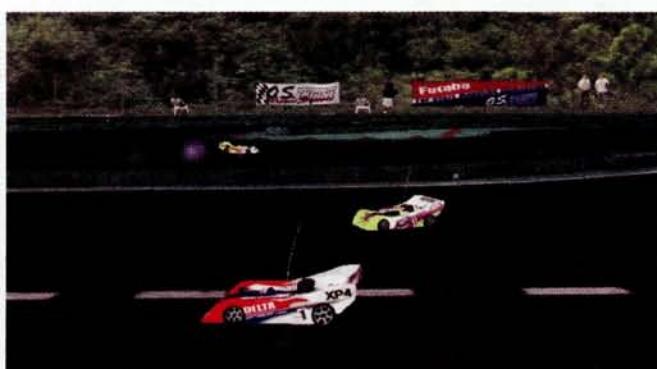
The V-One-RRR made history at the IFMAR Worlds in Sao Paulo, Brazil, when it grabbed the TQ and the win in the A-main and claimed eight of the top 10 spots in the final as well! Now that the belt-driven RRR is a world champion, Kyosho has released a WC Team Edition that includes many of the option parts used on the team drivers' cars at the Worlds. Here is the list of the additional items included:

- » One-piece, machined-aluminum engine mount
- » Universal driveshafts (front and rear)
- » Carbon damper stay (front)
- » Special drive belt set (front, middle and rear)
- » Aluminum brake hub
- » FRP battery plate
- » FRP middle plate
- » Zero-offset, 37-shore foam racing tires (front and rear)
- » Lightweight first-gear housing
- » Aluminum muffler stay holder

Kyosho; distributed by Great Planes Model Distributors
(217) 398-6300; (800) 682-8948; kyosho.com.

VIRTUAL RC RACING

Virtual RC Racing is available as a free download from virtualrc.com, the official VRC website. Created by a team of top international game developers, the sim is devoted to realistic nitro on-road racing and lets you get wheel time 24/7. With more than 25,000 registered users in 123 countries, Virtual RC offers players a truly global RC challenge. Every aspect of racing has been precisely modeled (check out the screen grabs), making Virtual RC Racing



more than a mere game; for on-road drivers, it's simply the best RC racing simulator. The graphics, control and "feel" are so realistic that practicing with Virtual RC Racing can improve your driving in the real world. You can even try different setups and compare before-and-after lap times; the software gives you all the tuning options of your RC car and saves your lap data.

Since it's web-based, Virtual Racing can continually introduce new features. Its latest addition is Artificial Intelligence cars. This exciting update gives you the option of adding up to nine opponents to your favorite track for heads-up racing action. Keep your eyes on the VRC site and *RC Car Action* for more updates!

Virtual RC; virtualrc.com



READERS' RIDES

BY PAUL ONORATO

YOUR BEST BUILDS

sponsored by

NOVAK
USA



reader's ride
OF THE MONTH



Tom Zatto > Temecula, CA
OFNA Dominator

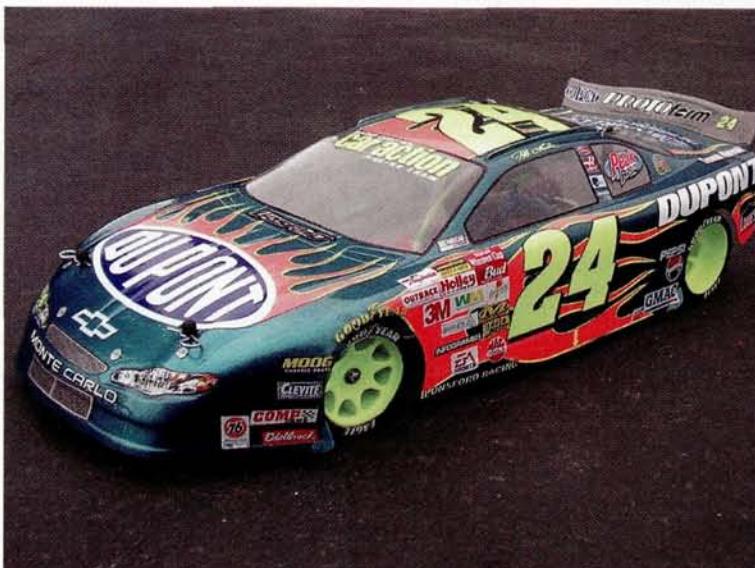
After owning his OFNA Dominator for two years, Tom decided to transform it into a tougher and faster monster truck. He used parts from a ton of aftermarket companies to build up his rig and did some custom fabrication as well. The long list includes an RB Concepts C5 Rody engine and air filter, Nova RC Products engine cooling head and shock towers, RacerX shocks and springs, MIP CVDS, Hardcore Racing Components titanium parts, Boca bearings and Hitec radio equipment—plus way more than we have room to list!

Dennis Henning > Beloit, WI
Quad-engine puller

Here is what Dennis has to show after a very cold Wisconsin winter: a home-built quad-engine tractor puller. This beast weighs 20 pounds, measures just over 38 inches long and is powered by four XTM 24.7 engines fed by four aluminum fuel tanks and driven by two XTM Mammoth trannies. The chassis is hand-built from stainless-steel tube, the exhaust is made of copper tube, the rear fenders are coffee cans, and the seat is an old cell-phone holder. The puller also features front and rear steering, dual-disc brakes on each tranny and Imex Jumbo Kong tires. Dennis's resourcefulness and craftsmanship are clearly evident, and they helped him earn Reader's Ride of the Month.

Les O'Dell > Everett, WA
Team Associated RC10L4 Oval

Oval racing is the hot class in Washington, and this RC10L4 is ready for some door-to-door rubbing action. Les has outfitted his car with TRC foam tires, Novak Cyclone ESC and XXL receiver, SMC 3300 batteries, Irrgang Racing Services graphite axle and Lunsford Titanium screws and turnbuckles. He topped it off with a Protoform Monte Carlo body that he detailed like Jeff Gordon's cup car using a set of Slixx stickers.



Robert Ballato > Merrimack, NH

Turbine-powered Kyosho Nissan Pathfinder

Does a toyish-looking truck deserve to be in Readers' Rides? It does when there's a turbine engine powering it. The first version Robert made was a ducted-fan car, which is not as

pricey as a turbine and was a perfect vehicle to learn from. Then he built the truck you see here.

An old Kyosho Nissan Pathfinder chassis became the platform for his creation, and he added a Wren MW-54 turbine engine that produces 12 pounds of boost. A Hitec Laser 6-channel radio system controls the steering, throttle and brakes. Robert plans to use the extra channels for a radio-operated wing and drag 'chute.



POWER UP YOUR RTR!

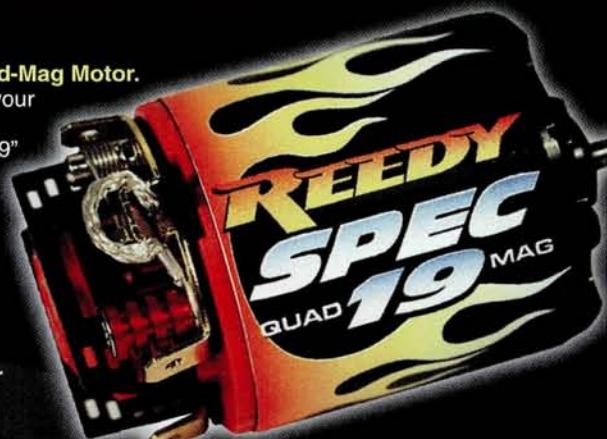
#700 Reedy "Rated-X" Sport Pack, GP 3300 cells

ONLY \$64.99
Suggested Retail Price

Reedy "Spec 19 Quad-Mag Motor."

Step up the power of your RTR with Reedy's Quad-Magnet "Spec 19" Motor! A great choice for the B4 RTR, the TC3 RTR, or any Ready-to-Run electric with a speed control rated for a 19-turn or less motor.

#513 Reedy Spec 19"Quad-Mag" Motor



Reedy's "Rated-X" Matched Sport Packs. Fully assembled in clear tubes so you can see the matching info right on the label of each cell. Don't settle for "mystery" cells in your sport packs, get Reedy's "X-Rated" packs and see the power you've been missing!



Reedy Ni-MH Receiver Packs for Nitro Cars and Trucks.

Reedy receiver packs give you the long-lasting, reliable power needed for nitro racing, and have a great low price that makes them your BEST choice!



#699 Reedy "Rated-X" Sport Pack, Panasonic 3000 cells

ONLY \$59.99
Suggested Retail Price

#615 Reedy Ni-MH Receiver Pack, (Hump style for RC10GT, Monster GT, Etc.)

#614 Reedy Ni-MH Receiver pack, (Flat style for Nitro TC3, etc.)

Michael Boule > South Pasadena, CA
Tamiya F201 Tuned Chassis Kit

Race fans are a special breed; they have a fanaticism for their favorite driver and team that's unmatched. Michael falls into this category, and it's

Team Jordan that gets his juices flowing. Since Tamiya did not offer a Jordan body kit for his F201, he created his own by making stickers to replicate the car used in the 2003 season. An LRP Quantum Competition 2 ESC, Epic flat-wire, 14-turn single motor, and Pit Shimizu tires outfit his top-of-the-line Tamiya F-car.



Jay Dungan > Lewisville, TX

Team Associated Factory Team B4

This Factory Team B4 is Jay's first car since the RC10 he raced more than 10 years ago. When assembling his new race buggy, he incorporated many tips from Radio Control Car Action and also added a Novak GTX ESC, Reedy MVP motor, Fusion 3300 battery pack, Futaba 3PK transmitter, Futaba digital S9451 steering servo and an AMB personal transponder. Although Jay would like to take credit for the custom paint job, the guys at FCA Grafix were the ones who hooked him up. Welcome back to RC, Jay, and nice work on the photography. ■



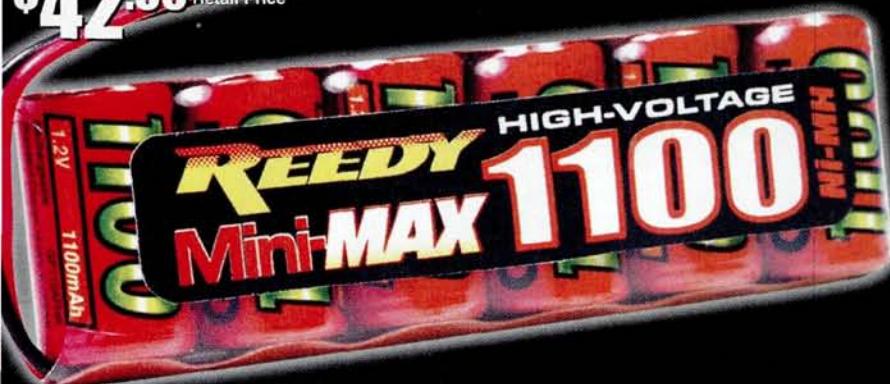
SEE YOUR RIDE IN READERS' RIDES!

We want to see what you're driving! Email your 300dpi TIFF or JPEG images to readersrides@airage.com, or send color prints (no Polaroids, please) to Readers' Rides, 100 East Ridge, Ridgefield CT 06877-4606 USA. Be sure to write your name, address and phone number on the back of each photo. Submissions will not be returned; we keep them to stick on the fridge.

Mini-MAX

Reedy Hop-Ups for Micros!

ONLY
\$42.99 Suggested
Retail Price



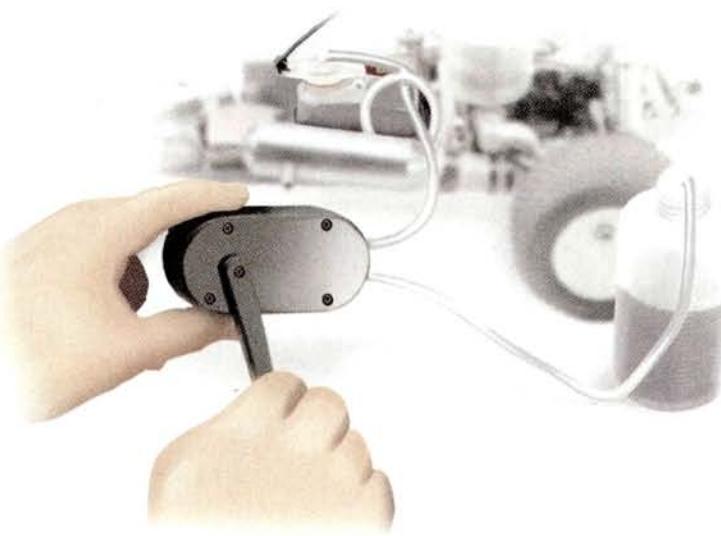
ONLY
\$44.99 Suggested
Retail Price

Reedy Mini-Max Modified Motor.
Seriously turn up the heat in your micro with the Reedy Mini-Max Mod Motor. Big time features like ball bearings and replaceable brushes are shrunk down to the popular 280-size to fit most 1:18 vehicles, especially the RC18T.
#290 Reedy Mini-Max Modified Motor

Reedy Mini-Max High-Voltage 1100 Ni-Mh Racing Battery Pack.
Higher voltage means more power and that's just what you get with Reedy's new Mini-Max 1100s. Featuring much higher voltage output than stock battery packs the Mini-Max HV 1100 pack is the ticket to making your micro car rip up the road. Comes completely factory assembled with connector and fits directly into the RC18T!
#616 Reedy Mini-Max 1100 Ni-Mh Battery Pack

www.rc10.com/reedy

REEDY
A Division of Associated Electrics
3585 Cadillac Ave, Costa Mesa, CA 92626



Fuel-tank siphoning

It's very important that you drain any leftover fuel from inside the tank and fuel lines before you store a nitro vehicle. To make the job easy, use a hand-crank fuel pump. They're available at most hobby shops and are often used by model-airplane enthusiasts to fill and drain the hard-to-reach fuel tanks found in some model aircraft.



Homemade belted tires

To prevent tires from expanding, apply a layer of duct tape or fiber-reinforced packing tape along the inside of the tire before you install the foam insert and glue the tire to the rim. One layer is all you need, and be sure to neatly cut off the excess tape. The tape will prevent the tire from expanding and will improve high-speed handling.



YOUR TIP

Stay-clean off-road tires

Chris Ashmore • Tennessee Colony, TX

To prevent dirt from collecting on your tires, spray a light coating of WD-40 over them and let it soak in for 10 minutes before wiping off the excess with a rag. The WD-40 prevents dirt and mud from loading up on the tires, and one application will last several runs. It will also soften the tires slightly, and that will provide more traction. The same technique can be used to prevent dirt from collecting on the suspension arms and chassis.

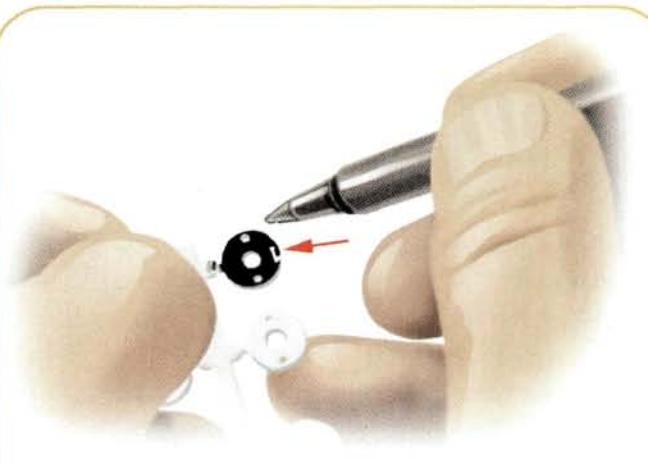


Easy shock oil and piston I.D.

It's easy to forget the type of oil and piston you've set your shocks up with. Use a Sharpie marker to write the information on the shock cap. An abbreviation such as "50/2" indicates that shocks are equipped with 50WT shock fluid and a no. 2 piston.

**Cheap cooling-head protector**

Here's a great tip that's worth showing again. The cooling head on a nitro engine can get scraped up pretty badly in a crash if it protrudes through the body. By attaching four zip-ties over the top fin, you can protect the head during a crash. The zip-ties will take the abuse instead of the cooling head.

**YOUR TIP****Easy-to-read shock pistons**

Daniel Mason > Fort Pierce, FL

Information about the size and quantity of valve holes is typically stamped onto one side of the shock piston. Unfortunately, the number stamp can be difficult to read when the piston is submerged in shock fluid. Use a Sharpie marker to coat the piston, then wipe off the excess. The number will stand out boldly, so it's easy to read even when the piston is submerged in shock fluid.

**YOUR TIP****Cheap pinion-gear caddy**

Anthony Jobbers > Grand Rapids, MI

You can make a pinion-gear caddy out of a hex wrench. Just slide the pinion gears over the wrench and tighten their setscrews.

**Easy-grab frequency crystal**

The channel-number tab on radio crystals can easily be ripped or completely torn off if you change crystals a lot. To prevent that, wrap a narrow piece of strapping tape around the crystal and join the ends of the tape. This will form a strong "handle" that won't tear off.



If we publish your tip, you'll win a 6-month subscription (or extension) and a chance to win the "Tip of the Year" grand prize: an OFNA RTR. Email your tips to GeorgeG@airage.com. Include a photo or scan a sketch if you can. Snail mail? Write to Pit Tips, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Be sure to write your name, address and phone number on each tip you submit.

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TROUBLESHOOTING

BY GEORGE M. GONZALEZ

YOU'VE GOT PROBLEMS > WE'VE GOT FIXES

Rough-track RC18T

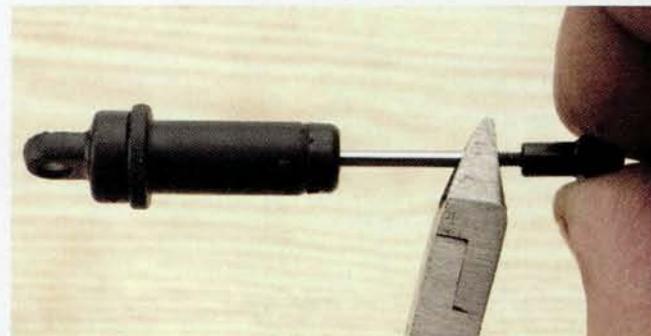
Q I recently purchased a Team Associated RC18T after reading the Track Test in the March issue. You were right: this little truck rocks. I decided to run it at my local track against some of my buds who own Team Losi Mini-Ts. I was very pleased to find that my box-stock RC18T is just as fast as my friend's Mini-T, which is equipped with a mod motor and lots of hop-ups. But my RC18T doesn't handle the bumps as well as his truck does. It gets tossed around quite a bit whenever it rolls over a dip in the track, but the Mini-T flies right over the same areas without getting out of shape. Do you have any tips to improve the RC18T's bump handling?

Also, how can I avoid getting it run over and punted around the track by the larger, 1/10-scale, cars and trucks? [email]

Robert Viantelli

A To increase suspension downtravel to help the truck cope with the dips, lengthen the shocks by approximately 2mm. Do this by unthreading the shock-shaft rod ends slightly. If you lengthen the shocks, you'll need to slide an O-ring over them on the outside to prevent the shock pistons from contacting the shock bladders. Using lighter shock fluids will also help: fill the front shocks with 20WT and the rear shocks with 15WT.

These small tweaks will greatly improve your truck's rough-track performance. Do not drive it when a bunch of guys are running 1/10-scale vehicles on the track, but if you must share the track, drive along the inner or outer parameters of the lanes. You'll avoid most of the ruts, etc., and, more important, allow the larger 1/10-scale trucks to pass without having to drive over your truck!



Lengthen the shocks by unthreading the shock-shaft rod ends to increase suspension downtravel a little.



Slide an O-ring over the outside of each shock shaft, as shown, to prevent the shock pistons from contacting the bladders. Fill the shocks with lighter oil to soften the damping and help the truck's rough-track performance.

REAL PERFORMANCE PRODUCTS!

T-Maxx/2.5-Maxx Steel Top Shaft



This precision machined **hardened** steel top shaft will fit all T-Maxx. Includes oversize ball bearing. RRP 8525

T-Maxx/2.5-Maxx Forward Primary and Reverse Gears



This kit contains a precision machined **hardened** steel primary forward gear, a **hardened** aluminum reverse gear and pin. RRP 8521

T-Maxx/2.5-Maxx Primary Reverse Gear



This gear is precision machined from solid aluminum and **hardened**. Includes pin. RRP 8522

NEW

T-Maxx/2.5-Maxx FORWARD ONLY Steel Gear Kit



This kit contains a 26T **hardened** steel output gear, a forward drive hub adaptor, steel spacer and Pin. RRP 8586. **Hardened** aluminum version RRP 8585.

T-Maxx/2.5-Maxx Hardened Forward Primary Gear



Precision machined from solid steel and then **hardened**. RRP 8529. **Hardened** aluminum version RRP 8528.

NEW

www.robinsonracing.com

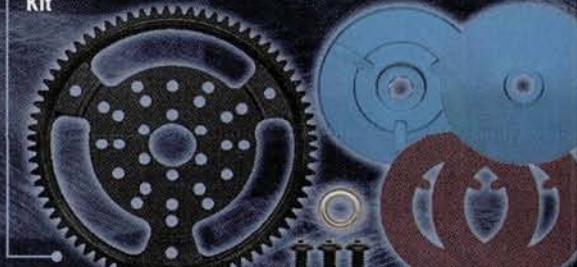
MAKE NO COMPROMISES!

T/E-Maxx/2.5-Maxx Accessory Spurs



A wide range of spurs fit our Double-Disc Slipper Kits. Choose from machined Super-Tough plastic spurs in 66, 68, 70, 72, 74 and 76T sizes, RRP 82XX, or CNC machined steel spurs available in 65, 72 and 76T sizes, RRP 83XX. Small Clutch Plate/Gear Adaptor fits 65 thru 70T spurs. Large Clutch Plate/Gear Adaptor fits 72 thru 76T spurs.

T-Maxx/2.5-Maxx Lightened Spur And Double-Disc™ Slipper Kit



RRP's NEW line of Lightened Spur and Double-Disc Slipper Kits for Traxxas Nitro and T/E-Maxx/2.5-Maxx trucks are designed to improve performance and increase reliability. This combo incorporates a machined steel or Super-Tough plastic spur, a Vented Aluminum Clutch-Plate/Gear Adaptor, 2 Slipper Pads and Plates to deliver the adjustability you need and the increased performance that you demand. **Complete Slipper Kits** are available in the following sizes: RRP 8166 Slipper Kit with 66T Super-Tough plastic spur (Stock Size) for E-Maxx. RRP 8172 Slipper Kit with 72T Super-Tough plastic spur for Traxxas Nitro. RRP 8465 Slipper Kit with 65T Steel Spur for Traxxas Nitro. RRP 8472 Slipper Kit with 72T Steel Spur (Stock Size) for T-Maxx. Spurs, Clutch-Plate/Gear Adaptor and Slipper Pads also sold separately.

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RRP
ROBINSON RACING PRODUCTS

Your fingers will thank you

Q I just completed my first kit truck—an Associated T4 (my first truck ever was an RTR Traxxas Rustler). Building it myself was fun, but I really had a hard time threading the ends onto the shock shafts and assembling the turnbuckles. I didn't want to scratch or squish the parts with pliers, so my fingers really took a beating. Also, popping some of the links onto the balls without resorting to pliers was really hard. Do you have any advice on making these jobs easier? I like building but those steps were not fun. [email]

Kyle Teeter

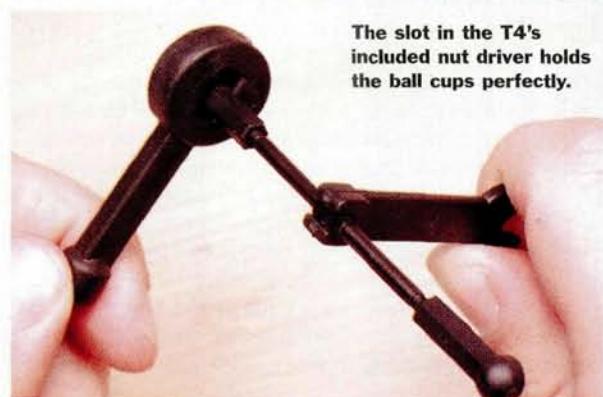
A Well, Kyle, it's all about having the right tools, which might even be included with your kit! Your T4 includes the tools shown in the pic (right). The turnbuckle wrench is easy to figure out, but many people don't realize that the nut driver with the circular handle is perfect for holding ball cups: they fit snugly in the handle's slot. I also like DuraTrax's Ball End Driver (DTXR1126), which has slots to fit a variety of rod-end types and costs only \$5 or so.

To make assembling the shock shafts easier, I pre-thread them with a screw from the kit that matches their threads. To hold the shock shaft while I thread the rod end onto it, I use the crimping jaw in my DuraTrax needle-nose pliers. I've never scratched a shaft with these pliers. Another trick is to hold the shaft by the threads with the pliers' cutting jaws (as I'm doing in the pics for "Rough-Track RC18T").

For snapping ball cups onto ball studs, use slip-joint pliers with a rag to pad the jaws, or better yet, Tamiya's plastic-jaw Non Scratch Pliers. They're a little pricey at about \$30, but I reach for mine often.



Tamiya's "Non-Scratch Pliers" are perfect for popping on ball cups.



The slot in the T4's included nut driver holds the ball cups perfectly.

T/E-Maxx/2.5-Maxx Steel Diff Gear Set



T/E-Maxx/2.5-Maxx differential gear set, includes: 1 beveled pinion gear, 1 beveled spur gear, 4 re-usable stainless steel phillips head screws, 1 tube Associated Black Grease, and a shim kit for spider gears with 10.003" shims. 2 sets needed per truck.
RRP 8590

DON'T SETTLE FOR SECOND!



T-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 8551 Blue, RRP 8550 Natural Silver
NEW 2.5-Maxx Vented Flywheel, Blue Only RRP 8552.

T/E-Maxx/2.5-Maxx Replacement Pinion



This precision machined steel steel pinion fits RRP 8590 Diff Gear. RRP 8591

T-Maxx/2.5-Maxx Aluminum High Performance Brake Kit



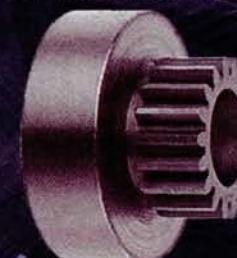
New, lightweight aluminum high performance brake kit, includes bigger, more aggressive brake pads and steel backing plates. One piece vented rotor minimizes side-to-side wobble. Also fits newer T-Maxx. RRP 8562
Older style half shafts use Brake Kit RRP 8560.

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4968 Meadow View Drive · Mariposa, CA 95338 · Voice 209.966.2465 · Fax 209.966.5937

T-Maxx/2.5-Maxx Hardened Steel Clutchbells



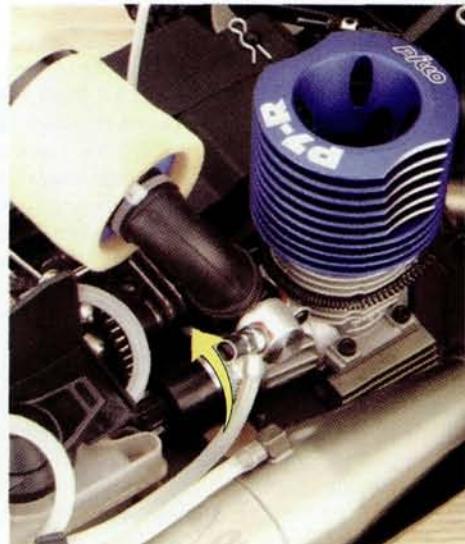
CNC Machined from solid steel these bells are built to last. They take the 5x11 bearing (NOT included). Available in 19T, RRP 8119, 20T RRP 8120, 21T RRP 8121 and 23T RRP 8123.

TROUBLESHOOTING

Buggy runs backwards

Q For some reason, my 1/8-scale buggy runs only in reverse. I bought a new starter box to crank the engine over and built it exactly as directed. I tried to crank the engine over, and the wheels spun backwards. I thought that I had wired my starter box wrong, so I reversed the positive and negative motor leads to change the starter motor's direction of rotation. That did the trick: the wheels spin forwards, but the engine still doesn't crank over. I decided to try starting the engine with my friend's starter box, but the wheels rotated in the wrong direction as soon as we tried to crank the engine. The engine eventually fired up, but the wheels spun backwards. What gives? [email]
Gerry Talbert

A It sounds as if you installed the front and rear diffs incorrectly, Gerry. Before you do anything, roll the car on a flat surface and note the direction in which the clutch bell spins. It should spin counterclockwise. If it spins clockwise, the diffs have been installed incorrectly. You'll have to partially disassemble the buggy to get to the front and rear diffs. Then, simply flip the diffs over so that the ring gear is on the opposite side of the gearbox, and reinstall them. After you've rebuilt the buggy, roll it forwards and make sure that the clutch bell rotates counterclockwise. If it does, you're good to go.



Roll your buggy forwards, and note the direction in which the clutch bell rotates. It should rotate counterclockwise. If it rotates clockwise, you've installed the front and rear diffs incorrectly.



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. RRP 2365



Cut from solid steel stock, this RC10-GT gear is lightened and hardened for super quiet precision and extra long life. Black tranny grease included. RRP 2213



CNC Machined from solid titanium, this super hard, super light top shaft will fit any Stealth transmission. RRP 1512.

RC10GT Hardened Steel Clutchbells



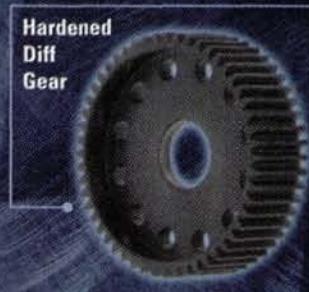
These steel Clutch Belts are CNC machined from solid steel then the teeth are machined on. This makes the part stronger with less gear "run out". Available in 14T thru 20T, 22T and 24T. RRP 22XX

DON'T SETTLE FOR SECOND!

RC10GT 32 Pitch Spurs

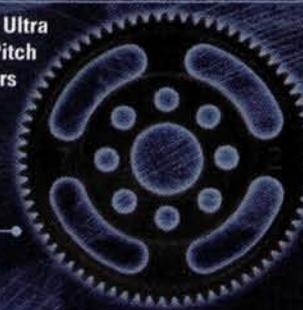


Precision machined from heat-resistant, super tough plastic, these spurs mesh flawlessly with our Clutchbells. Available in 63T thru 67T. RRP 2263 - RRP 2267.



Hard anodized, precision CNC machined aluminum diff gear
RRP 1513
RC10-GT

TC3 Ultra 48 Pitch Spurs



Precision machined from heat-resistant plastic, these spurs mesh flawlessly with our pinions. Available in even numbers from 70T thru 80T. RRP 1670 - RRP 1680.

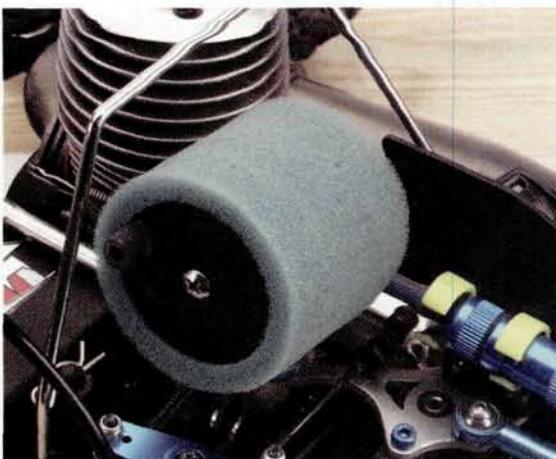


sponsored by



Less air-filter maintenance

Q I'm new to nitro and I wonder whether there's a way to extend the time between air-filter cleanings. The air filter in my OFNA Ultra MBX Pro buggy is really dirty after two tanks of fuel. I was told to never let the air filter get overly dirty, but having to clean it and apply air-filter lube so often is a big hassle. Would installing a K&N metal-screen air filter extend the time between cleanings? [email]
Justin Barkley



If you install a prefilter over the air filter, you won't have to clean the air filter as often.

A You should clean and lube the air filter after every hour of running or after five or six tanks of fuel. If you run in extremely dusty conditions, you'll have to clean it more frequently. Installing a prefilter over your air filter will definitely keep it cleaner for longer. OFNA, O.S. and several other companies offer prefilters. A prefilter isn't lubed, so you can remove it after every run, shake out the dirt, and then reinstall it. You'll still have to clean and relube the air filter periodically to ensure that dirt does not pass through it and into the carb, but you won't have to clean it as often as you do now. ■

TOOLBOX

OFNA Key Chain Plug Holder

The OFNA key-chain plug holder has five threaded slots to safely hold your glow plugs. It's made of anodized aluminum and features a heavy-duty belt clip, so you can always have a fresh glow plug within reach. It's available in blue and purple and has a key ring, too.



OFNA Key Chain Plug Holder—item nos. 51000 (blue), 51001 (purple); \$7.
OFNA Racing (949) 586-2910; ofna.com.

Send your "Troubleshooting" questions and comments to troubleshooting@airage.com, or mail them to "Troubleshooting" c/o RC Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA.



NEED HELP?

HPI Savage 21 Nitro Steel Combo



This new 52 tooth Spur and 14 tooth Clutch Bell are CNC machined from solid steel and then hardened for unmatched performance and durability.
RRP 7052

NEW

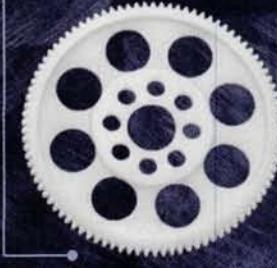
HPI Savage 21 Nitro Vented Flywheel



Aluminum vented flywheels move air over clutch bell, improving performance and cooling.
RRP 7000

NEW

Stealth Spurs



These precision machined spur gears are super quiet. They're available in 48P in 60T thru 96T sizes, and fit any Associated or HPI electric car or truck.
RRP 1860 thru RRP 1896.

Electric Car And Truck Pinions:

48P Absolute Series Pinions



Super hard, lightened and cut with unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone! Available in 48P in 16T thru 28T sizes. RRP 1416 - RRP 1428.

48P / 64P SuperLite Aluminum Pinions



They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T, and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P). Only \$5.25

48P Hard Nickel Plated Steel Pinions



These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012 - RRP 1035

For those of you not currently serving in the Air Force (or watching the *Discovery Wings* channel), JATO stands for Jet Assisted TakeOff, a fancy acronym for the process of strapping big ol' rockets onto an airplane that needs to get airborne in a big hurry. It's also the name of Traxxas' new clean-sheet stadium truck, which the company hopes will deliver similarly scintillating performance—and the Jato sure looks like it will deliver. As soon as our photo-sample Jato emerged from its bubble-wrap cocoon, we instantly recognized it as something special—a truck like no other, and about as far removed from a Nitro Rustler as Traxxas could possibly get. You can forget any "just like the (insert truck name)" comparisons here. The Jato is innovative, unique and all-new—and makes its official debut right here, right now.

TRAXXAS JATO

SPECS

Length 16.5 in. (420mm)
Front track 12.9 in. (327mm)
Rear track 13 in. (330mm)
Height 5.7 in. (145mm)
Wheelbase 11.1-11.2 in. (283-285mm)
Weight 75.6 oz. (2,143g)
Chassis 3mm 6061 T6 aluminum w/molded sideguards
Final drive ratios 11.73:1 (1st gear)/ 8.75:1 (2nd gear)
Differential Sealed, silicone-filled bevel gear
Driveshafts Telescoping universal-joint, bellows-sealed
Slipper clutch "Torque Control" with semi-metallic pads and aluminum pressure plates
Wheels Traxxas 2.8 in., 5-spoke chrome
Tires Traxxas Victory, factory mounted and glued
Radio Traxxas TQ 2-channel
Steering servo Traxxas 2055 high-torque
Throttle servo Traxxas 2018 standard
Receiver battery Not included
Engine Traxxas TRX 2.5
Fuel tank 75cc primerless with internal sintered filter



OPTIONS

Traxxas already has tuning parts in the pipeline for the Jato, and they more than hint at Traxxas' even higher-performance aspirations for the truck. Here's the list so far:

- » Single-speed conversion.
- » Low-mass CV-style driveshafts
- » 7075 T6-aluminum turnbuckles
- » Swaybar set

REVOLUTIONIZING THE STADIUM TRUCK

BENCH-TESTING THE JATO

Our Jato was strictly a photo truck, no running allowed. But that didn't stop us from doing everything but run it! Here are some of the interesting items we noted

The suspension is ultra-plush. The high-volume shocks have excellent feel, and the suspension matches or bests anything in the stadium-truck realm—racing or RTR. Only on-track testing can reveal how well the Jato really works, but based on drop-testing and hand-squishing, the Jato's suspension feels ready for anything. It's also got a ton of travel; Traxxas claims up to 12mm more than the competition.

Precision transmission. The Jato rolls forever, but it's not just because the transmission gears rotate so freely. Thanks to the internal 2-speed's one-way bearing, the spur gear and clutch bell aren't driven by the tranny gears when the truck is coasting.

It's easy to work on. As you can see, we disassembled the truck for photos. Since we had no manual (and made no effort to organize the parts—that would be like work), the fact that we got it back together makes it easy to work on by default! The Jato's modular construction, thoughtful design, and lack of E-clips made it a pleasure to wrench on.

Details matter. Small items like the fuel-line pinch for easy engine shut-down, the fuel tank's opener strap, the built-in charge jack and the roll hoop's molded-in fuel line clips are convenience items that just make the Jato a nicer truck to live with, while the threaded shock bodies and turnbuckles are tuning items we always demand of race trucks—but are unexpected on an RTR.



Naturally, the chassis is fully countersunk. There are openings for the starter housing, flywheel (bump-start, anyone?) and fuel-tank sump.

CHASSIS

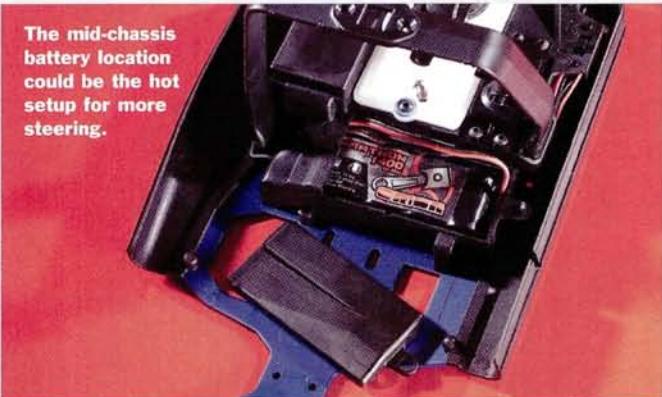
»» 3MM 6061 T6 ALUMINUM MAIN CHASSIS PLATE

The Jato's chassis material is pretty standard stuff, but instead of a flat plate, the chassis edges curve up gently to increase rigidity—and also to blend in with the ...

»» INTEGRATED MUDGUARDS

Why hasn't anyone done this before? The buggy-style guards will help keep the chassis clean and also protect the exhaust system.

The mid-chassis battery location could be the hot setup for more steering.



»» DUAL POSITION POWER SYSTEM Unlike all other stadium trucks, the Jato gives you two receiver-pack locations: you can opt for the tried-and-true "rear trunk" (which accommodates a 4-cell alkaline holder) or move the battery weight inboard and mount it between the engine and fuel tank (using a 5-cell flat pack). Either way, it's sealed away in an enclosed compartment, and there's even a charge jack built into the upper deck. If you use the mid-chassis battery position, you can replace the rear compartment with a compact rear bumper (included with the Jato).

»» METRIC HEX HARDWARE THROUGHOUT Not a Phillips head to be found, and Traxxas says the screws' black-oxide finish is rust-resistant.

DRIVETRAIN

»» INTERNAL 2-SPEED That's right, the Jato is a shifter, and the mechanism is completely contained within the gearbox—no bulky (and contamination-prone) double spur gears here. It's a pawl-type unit, incredibly compact, and the shift point is fully adjustable via a plug-sealed port in the transmission housing.

Right: the 2-speed is very compact. This is the pawl side; note the aluminum input gear.



Note the dual top-shaft gears and the gears that flank the idler—that's where the 2-speed magic happens.

»» REVO-STYLE SILICONE-FILLED SEALED GEAR DIFFERENTIAL

For racers, this is an even bigger deal than the 2-speed. Unlike a ball diff, there's no chance of loosening (or the diff-gear meltdowns that result), and you can easily adjust the diff action by varying the viscosity of the diff fluid. This adjustability simply does not exist with a ball diff. Like the Revo, the Jato diff is sealed by a controlled-crush gasket and X-ring output seals, and the gears are hardened

steel. Ordinary shock fluid is used in the diff; Revo diff fluid is too thick, says Traxxas.



A silicone gasket and X-ring seals keep the silicone fluid where it belongs: inside the differential.



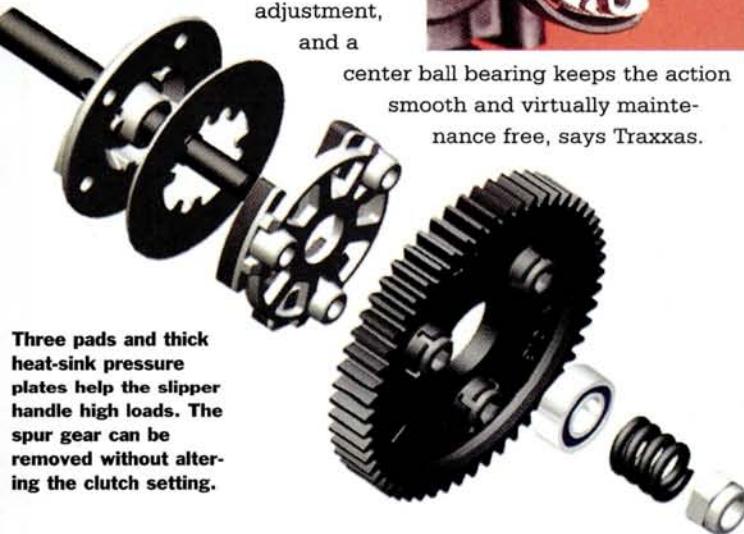
Diff access is simple, and the drive yokes' pins are threaded for easy removal.

>>> TORQUE CONTROL SLIPPER

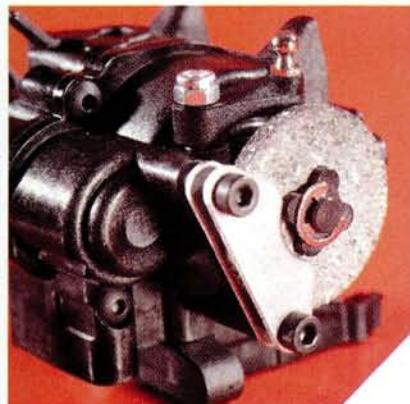
CLUTCH This Revo-proven design uses semi-metallic friction material and finned-aluminum alloy pressure plates to dissipate heat. The spur gear can be removed without altering the slipper adjustment, and a



center ball bearing keeps the action smooth and virtually maintenance free, says Traxxas.



Three pads and thick heat-sink pressure plates help the slipper handle high loads. The spur gear can be removed without altering the clutch setting.



The brake rotor is a thick semi-metallic disc. See that E-clip? It's the only one on the truck.

>>> LARGE-DIAMETER DISC

BRAKE "Jato lets you brake later and dive harder into the corners," says Traxxas, thanks to the semi-metallic rotor that hangs off the left side of the transmission, Losi-style. Traxxas claims the new material outperforms graphite and fiber-glass rotors, and based on what the stuff does for the Revo's brakes, we believe it.



Though smaller than the Revo's, the Jato's telescoping universals use the same curvilinear spline design and bellows seals.

>>> UNIVERSAL-JOINT AXLES WITH DUST

BOOTS More Revo-style stuff here. True curvilinear splines operate with far less binding under load than the square-cornered splines of old, and they can handle much greater travel extremes than conventional axles. Bellows-style dust boots keep grit out of the works.

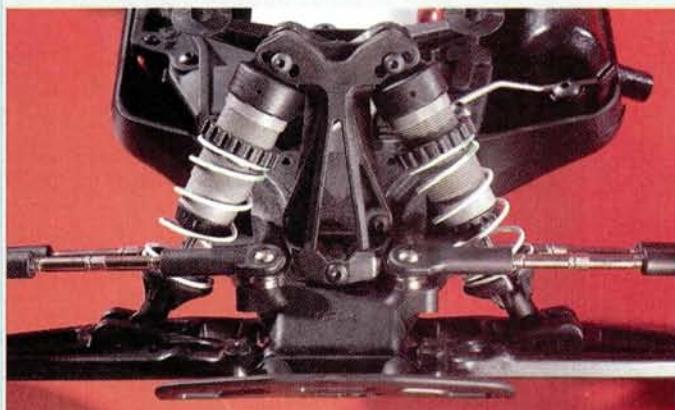
>>> RUBBER-SEALED BALL BEARINGS What's the point of going RTR if you have to take it apart for bearing maintenance? All the Jato's exposed bearings are rubber-sealed, so you can leave your bearing cleaner and micro-oiler at home.

SUSPENSION

>>> IT'S BOMPROOF The hingepins are hardened steel and fully captured, so there are no E-clips to lose, and the rod ends are captured, so they can't pop off.



The axles use 12mm hex hubs and will accept Traxxas' existing 2.2-inch truck wheels if you want to mount standard tires. Note the screw-in hingepins and the extra beef on the upright where it meets the suspension arm.



Threaded shocks, turnbuckles and vertical ball studs (among other features) make the Jato easy to tune.

>>> FULLY ADJUSTABLE Chunky, 4mm steel turnbuckles set front and rear camber, and vertical ball studs let you alter the front roll center easily. In the rear, five inboard camber positions are available, and the shocks each get three upper and five lower mounting options. Rear toe and anti-squat can be altered by switching out the forward hingepin bracket. Wheelbase is adjustable at the rear hubs, and an optional swaybar set will be offered. Your best setup has gotta be in there somewhere!

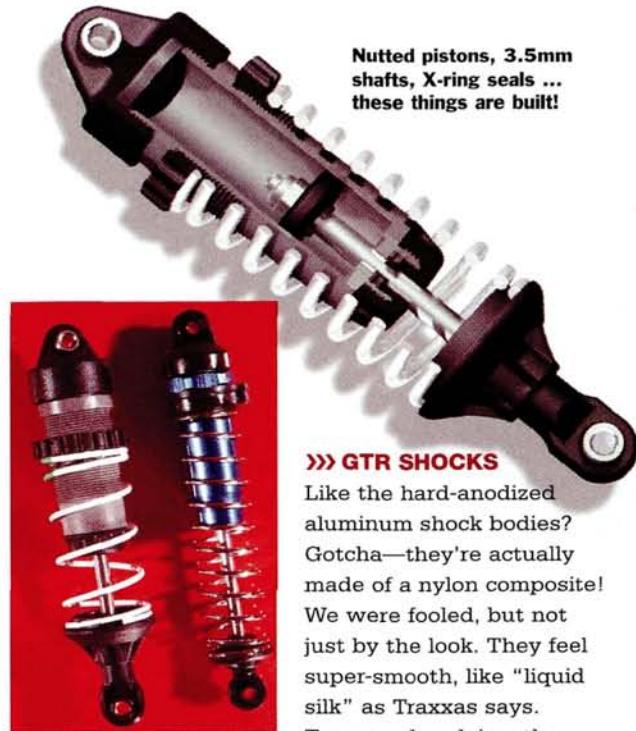
>>> ZERO BUMP-

STEER The Jato's steering bellcranks are angled back to match the steering arms' caster angle, so bump-steer is eliminated; 30-degree caster blocks are standard, and there's a 25-degree option set. A cam-type servo-saver is built into the bellcranks, and it's actually accessible



with a wrench—most trucks bury their servo-savers.

Note that the 'cranks stay with the front clip for easier disassembly.



And you thought the shocks looked short. The Jato's GTR shocks are the same length as other stadium trucks' (here, an RC10GT RTR unit) but much greater in diameter.

they're big! Silicone X-seals keep the fluid inside, bladders handle volume compensation when the heavy-duty 3.5mm shafts slide into the bodies, and threaded preload adjusters are standard.

BODY, WHEELS AND TIRES



there are no shock-tower bulges and barely a roll cage—it's as sleek as trucks get. Naturally, it's completely finished at the factory in ProGraffix style. Look closely, and you'll see that the rocker panels blend neatly into the chassis' mudguards, giving the Jato a finished, nearly seamless look. Slick.

»» TRAXXAS 2.8 WHEELS AND VICTORY TIRES



Who wants dish wheels now?

ENGINE AND ACCESSORIES

»» TRAXXAS TRX 2.5

RACING ENGINE If you're not familiar with this engine by now, you must be new to *RC Car Action* (enjoy the mag, kid). Traxxas mounts the engine dead center in the chassis for perfect left-to-right weight distribution, and the TRX 2.5 is still the most powerful original-equipment .15 engine we've ever tested. If it's powerful enough to make the T-Maxx and Revo some of RC's fastest monsters, imagine what it will do in the "little" Jato. Actually, you don't have to imagine—Traxxas claims 55.8mph!



Here's a familiar looking mill. The TRX 2.5 is Traxxas' answer to the Chevy small-block.

»» EZ-START Traxxas' onboard electric starter is well proven in the Maxx-series trucks and the Revo, and the Jato gets the latest version with revised electronics for even greater reliability. There's the obvious convenience of one-handed, pushbutton starting, but the setup also lets you know if the glow plug is bad or not connected properly, and it shuts down if overloaded (due to a flooded engine, for example). The EZ-Start plugs into the chassis' rollover hoop, which also serves as a carrying handle.

»» DYNOM-TUNED PIPE AND HEADER According to Traxxas, the Jato's exhaust system is designed to enhance bottom-end performance. The stock pipe is composite plastic and mates with a tubular aluminum header. Traxxas plans a line of "Thruster" pipes that will let you tweak the engine's output for midrange or top-end performance.

»» LOW-PROFILE FUEL TANK We tend to think of fuel tanks as mere boxes for fuel, but there's a lot of tech here. Internal baffles and a lowered sump help maintain consistent fuel flow, and a sintered bronze filter keeps outgoing fuel clean. An extended filler handle makes it easy to yank the tank open with the body on for fast pit stops, and a molded-in spillway directs overflow out the bottom of the chassis. And, the tank is centered in the chassis, so fuel depletion won't affect chassis balance.

»» SLAMMED SHELL

The Jato's sheet metal (so to speak) looks ultra-low, yet it's as sleek as trucks get. Look closely, and you'll see that the rocker panels blend neatly into the chassis' mudguards, giving the Jato a finished, nearly seamless look. Slick.

2.8-inch wheels make the 2.2-inch standard look downright wimpy, and the split-spoke chrome hoops make us wonder why we ever went to dish wheels. But there's more to Traxxas' new standard than style; the larger wheel means the tires' sidewalls are much lower, so tread movement is reduced. The tires slot into the wheels buggy-style (or Revo-style, if you like) and are factory-glued. Wanna race? The Jato can also accept Traxxas' ROAR legal 2.2 rims.

THE VERDICT (SO FAR)

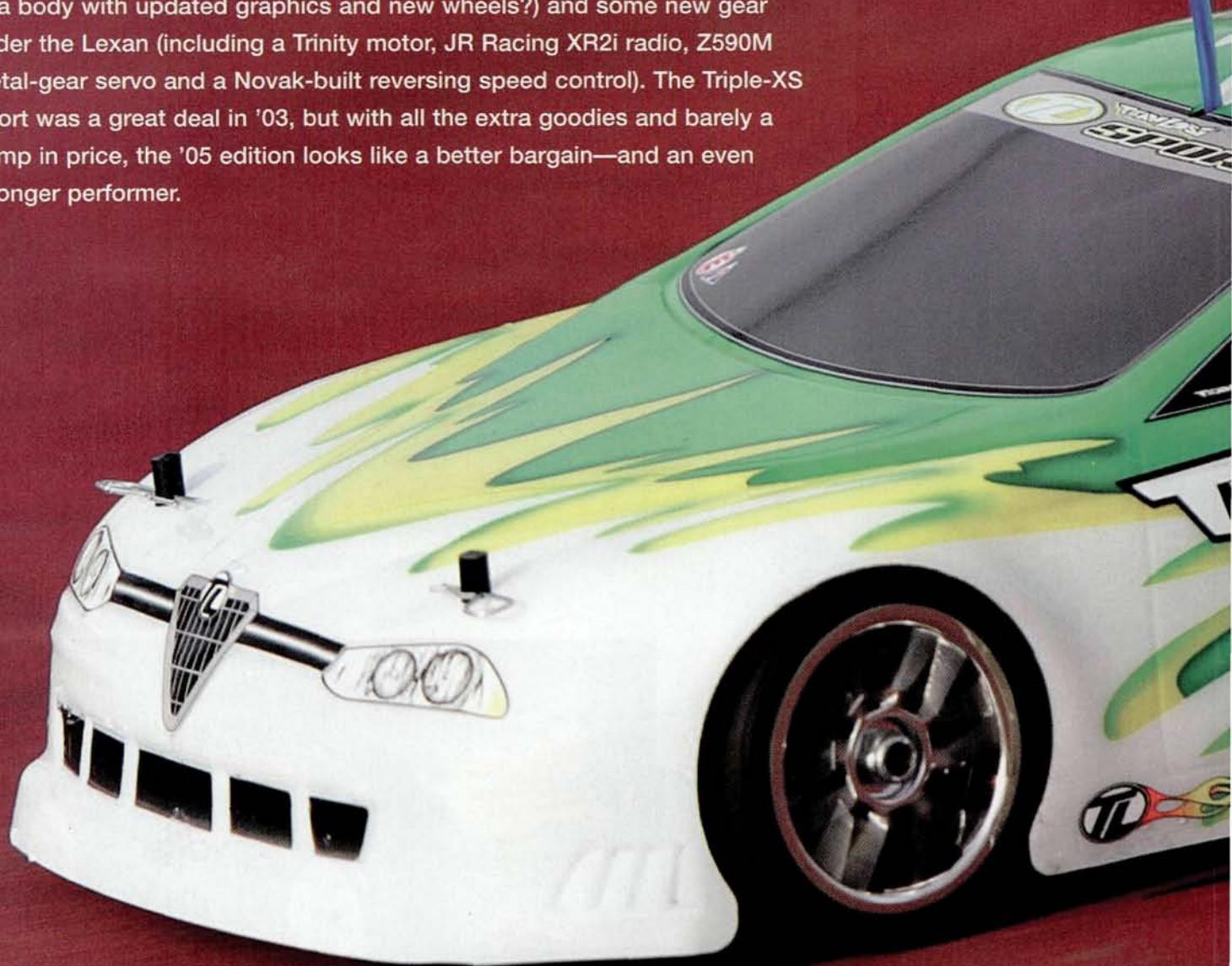
Hey Traxxas, thanks for sharing the Jato with us, but not being able to drive it has been sheer agony! We won't know what the Jato can really do until we drive one, but we have plenty of experience with the TRX 2.5 engine, so we know it will be fast and reliable, at the very least—and for many RTR buyers, that's all that really matters. But we think the Jato has the potential to hang with the best (and based on last month's "Inside Scoop" pics of a pull-start, race-spec Jato, we think Traxxas has the same idea). It might turn out to be the best RTR stadium truck. We wonder if it could also be the best racing truck. ■

©FIND IT

»» Go to page 234 for manufacturers' contact information

Losi revs up its road-going RTR

Wow—has it really been two years since Team Losi launched the ready-to-run “Sport” version of its Triple-XS sedan? Yep; I reviewed it back in the April '03 issue. For 2005, the no-build X-car has a new look (see the new Alfa body with updated graphics and new wheels?) and some new gear under the Lexan (including a Trinity motor, JR Racing XR2i radio, Z590M metal-gear servo and a Novak-built reversing speed control). The Triple-XS Sport was a great deal in '03, but with all the extra goodies and barely a bump in price, the '05 edition looks like a better bargain—and an even stronger performer.





Team Losi
TRIPLE-XS
Sport II

KIT FEATURES

CHASSIS. The Triple-XS chassis is laid out shaft-drive style: battery on the right, motor and electronics on the left. But instead of a shaft, there's an enclosed belt tunnel with a clear Lexan hatch for spur-gear access. The chassis is slotted for side-by-side cells (with an extra slot for pack-position adjustment), and the scalloped battery strap holds the cells securely. Of course, most buyers will opt for a stick pack (I did), in which case you just flip the strap over. When it's time to work on the Triple-XS, you'll appreciate its simple design. Many components that are separate on other sedans are simply molded directly into the chassis. It's convenient, but that's just a side benefit; the original idea behind the integrated design was to increase tweak-resistance by limiting the number of parts that could be knocked out of alignment in a crash. If you're racing, that kind of stuff matters.

DRIVETRAIN. Along with its unique chassis design, the Triple-XS also has a unique drivetrain. It's a single-belt system wherein the belt is spun directly by a spur gear that is molded with the main drive pulley as a single part. The belt wraps around an adjustable tensioner and then makes the trip to the front and rear ball differentials. The ball diffs use large-diameter pulleys to reduce the belt tension required to prevent belt slippage. They are externally adjustable, so you can make diff adjustments without removing them from the chassis. This is particularly good news for RTR guys—if you wanted to wrench, you would have bought the kit! Gear-mesh adjustments are also easy because the Triple-XS uses a rotating cam as a motor plate. That's just a footnote, as the mesh was set perfectly on my tester. Metal-shielded ball bearings and steel CVDs (the real thing, not knockoffs) complete the drivetrain, and since the axles are capped by standard 12mm drive hexes, you can install any type of wheels you like after you wear out the kit rubber.

SUSPENSION AND STEERING. More good stuff here, with hard-anodized aluminum shocks stealing the show. Preload is adjustable via clamping shock collars, and you'll find them easy to rebuild should you decide to mess with oil-viscosity changes. My test car had a little air trapped in the shocks—enough to annoy a hardcore racer, but RTR guy isn't likely to notice or care. The air certainly won't affect parking-lot-play performance.

The Triple-XS's suspension is fully adjustable for arm droop, wheelbase, camber, toe-in and roll-center. C-carriers hold the steering arms via combination kingpin/ball studs, and steel turnbuckles are used for all the linkages so you can adjust camber and toe without disassembly. There are also four upper-mounting



Left: hard-anodized shocks and turnbuckles are standard, and the 12mm hex hubs accept all popular wheels.

Right: the chassis is slotted for side-by-side cells, and the large opening under the motor lets it hang low (great for the center of gravity, but watch out for rocks).

INCLUDED ELECTRONICS & ACCESSORIES

JR RACING XR21 TRANSMITTER AND R12S RECEIVER

Although usually reliable, most RTR radio systems are bare-bones, no-frills deals; you're lucky if you even get a steering wheel with a foam grip. Not so with the Sport II; it's packing an XR21 system that has such racing features as an LCD, digital trim levers, assignable grip levers, subtrim, steering and throttle endpoints and more. It's as good as AM radios get and a step way, way up from standard RTR fare.



JR RACING Z590M SERVO

Another big plus. Most RTRs are spec'd with 40 oz.-in. "standard" servos, which to be fair, are adequate for RTR tourers. But the Sport II is a high-performance tourer, and it deserves a more powerful servo. The Z590M has 85 oz.-in. of steering power and all-metal gears to boot, so it's tough as well.

TEAM LOSI SPORT BY NOVAK SPEED CONTROL

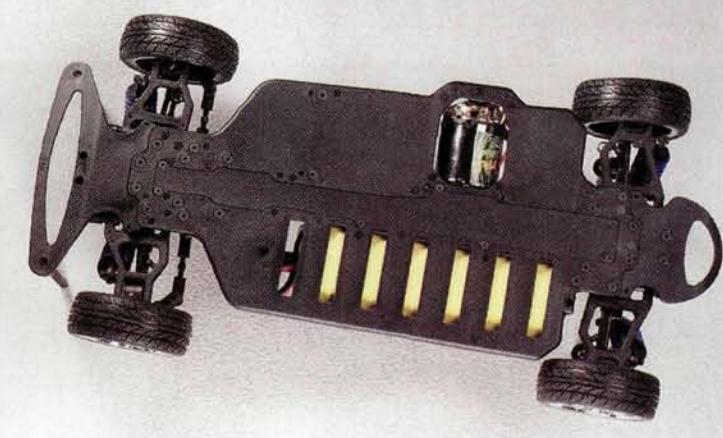
Team Losi has switched from a GM Racing V3R speed control to a Novak-built unit. It can

handle mods down to 15 turns, and thermal-overload protection prevents beginner abuse from overheating the speedo. "Smart Braking" is its best feature. When you hit the brakes, you get fully proportional braking control using full trigger-travel range. To activate reverse, you return the trigger to neutral and then hit up-trigger again for

proportional reverse throttle. You don't have to sacrifice braking control for reverse control or vice versa.

TRINITY 19TH NERVOUS BREAKDOWN MOTOR

There's no avoiding it: motor brushes wear out. So if your motor has nonreplaceable brushes, that means you have to toss it. The Sport II's Trinity powerplant won't suffer that fate because it uses replaceable brushes. It's pretty speedy, too—at least for new drivers. See "Performance" for radar data.



SPECIFICATIONS

MANUFACTURER Team Losi

MODEL Triple-XS Sport II

DISTRIBUTED BY Horizon Hobby

SCALE 1/10

PRICE \$290

Varies with dealer

DIMENSIONS

Wheelbase 10 in. (256mm)

Width 7.4 in. (187mm)

WEIGHT

Total, as tested 51 oz. (1,455g)

CHASSIS

Type Molded semi-tub

Material Plastic

DRIVETRAIN

Type Single-belt 4WD

Primary 24T pinion/88T spur gear

Transmission ratio 1.83:1

Final drive ratio 6.7:1

Drive shafts Steel MIP CVDs

Differentials Ball-type with plastic outrivets

Bearing type Metal-shielded ball bearings

SUSPENSION

Type Lower H-arm with steel turnbuckle camber links

Shocks Hard-anodized aluminum

WHEELS

Type One-piece plastic, chrome mesh-style with 12mm hex

TIRES

Type Treaded rubber with foam insert

ELECTRONICS

Transmitter/receiver JR Racing

XR2i with R12S receiver

Servo JR Racing Z590M

Speed control Team Losi Sport by Novak

Motor Trinity 19th Nervous

Breakdown

Battery Not included

FACTORY OPTIONS*

MIP aluminum CVDs

(pair)—item no. A-9929

Certified shock fluid 50 to 100WT (6-pack)—A-5421

GRAPHITE PARTS

Suspension arms (F/R)—A-9737/A-9839

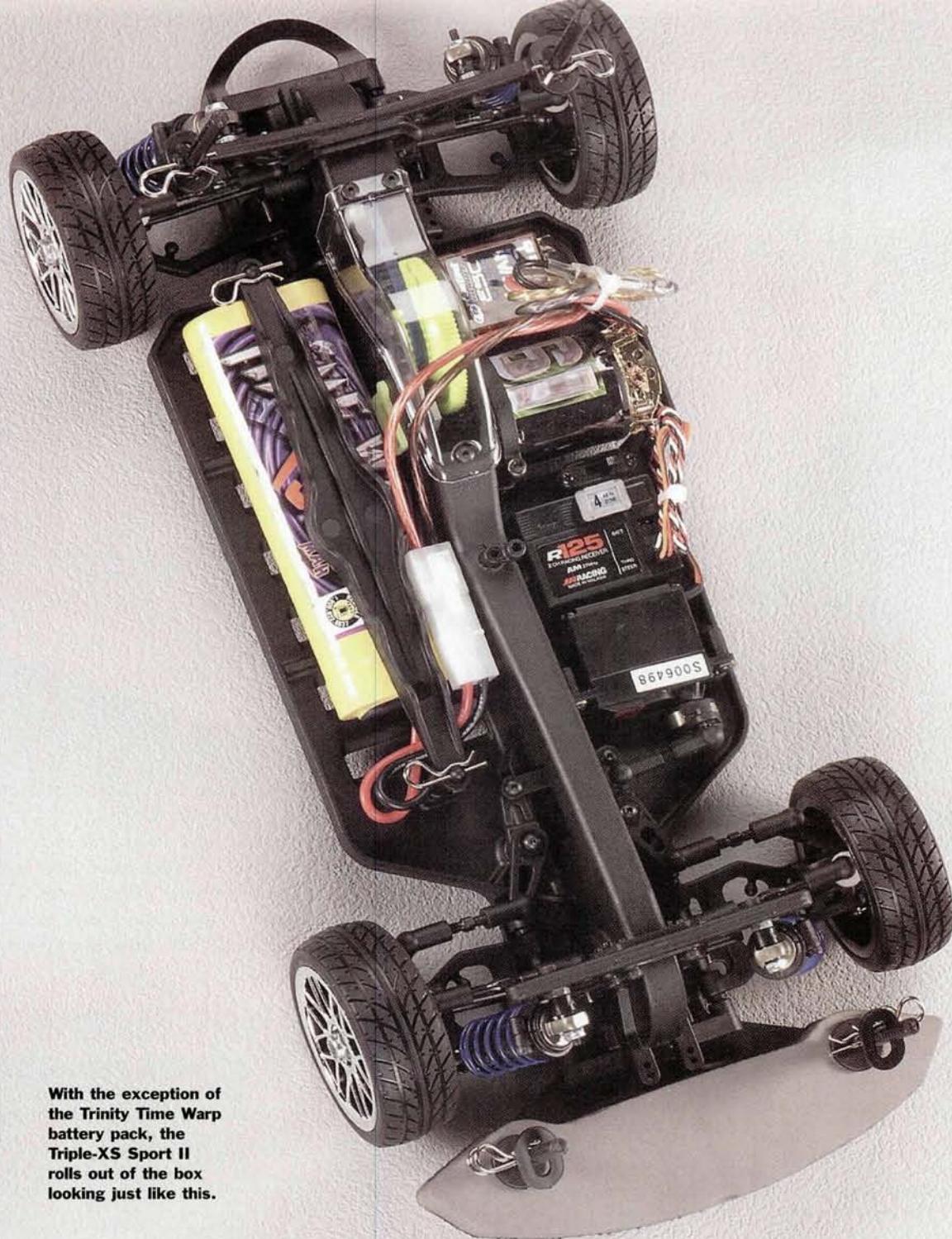
Shock towers (F/R)—A-9744/A-9844

Front spindles and carriers—A-9747

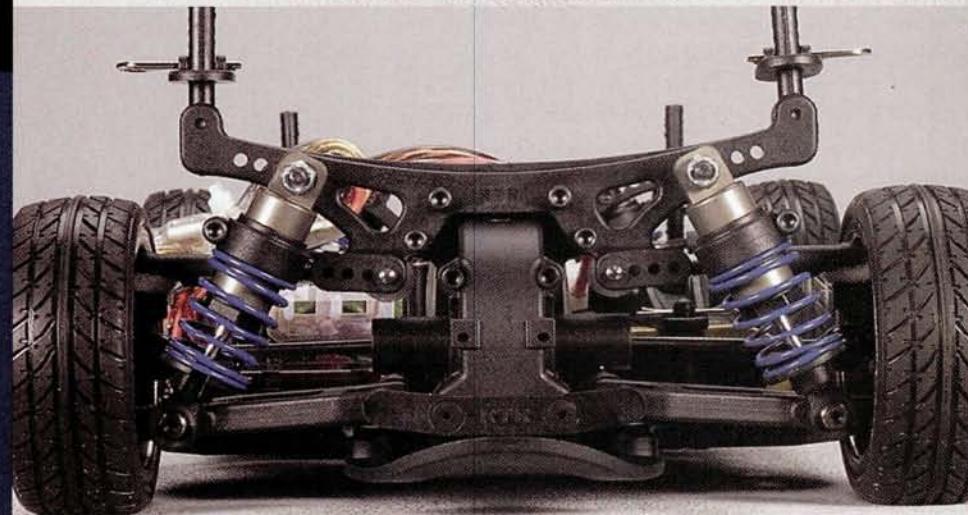
Rear hubs—A-9847

Main chassis—A-9918

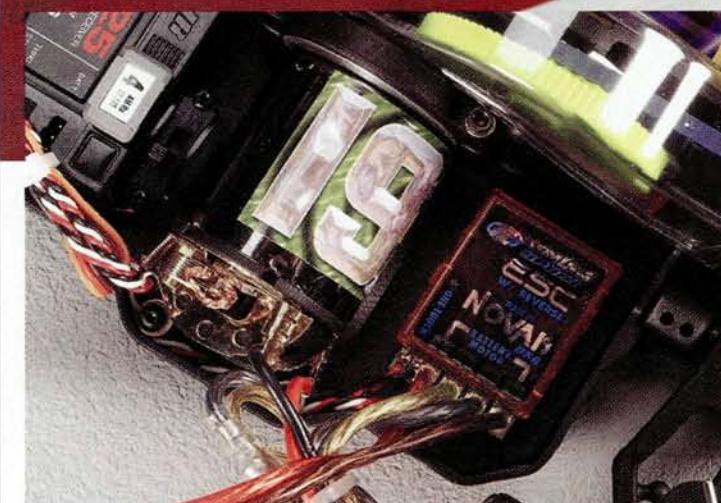
Partial list; additional options available



With the exception of the Trinity Time Warp battery pack, the Triple-XS Sport II rolls out of the box looking just like this.



Unless you get close enough to see the discreet "RTR" that's molded into the parts, you'd never know this wasn't a kit Triple-XS. Note the upside-down body post pads—that's the only assembly goof I noted.



Trinity provides the 19-turn motor, and Novak builds the speed control. You may have heard of these two brands.

positions for each shock, so if you decide to try racing, you'll have plenty of opportunities to get your setup dialed in.

BODY, WHEELS AND TIRES. Here's where the Triple-XS Sport II reveals some "II" features. First up, the body: it's still factory-finished, but the graphics are all-new and more racecar-like. If

you aren't into green, you can also get red, which we would be a good match for the body's new look—it's now an Alfa Romeo-style instead of a Stratus. Losi leaves decal application to you, but the stickers are pre-cut to save you a scissor session.

There's also something new in the wheel wells. Chrome-plated "mesh" rims replace the original Sport's bland dish wheels and increase the street appeal. Treaded tires are glued to the hoops for you, and foam inserts keep them pumped up.

TUNING

MORE MOTOR CLEARANCE

The Sport II's superlow motor is great for racing, but it tends to get beat up when play driving. To raise it, swing it up on its cam until the pinion is back in touch with the spur gear. You may need to slide the pinion out on the motor shaft by a millimeter or so if it rubs the side of the belt tunnel.

SPEED-CONTROL INSTRUCTIONS

Losi sets up the Sport speed control for you at the factory, but it would be nice if a manual was included for it, just in case. No worries; it's a click away at teamnovak.com. Download the manual for the Novak XRS; it's basically the same as the Losi Sport speed control.

FREE SPEED!

My Sport II's motor brushes hung up easily because of the way the shunts were folded over the hoods. After repositioning the shunts, the hang-ups disappeared—and the car's top speed went from 18mph to 22, with stronger acceleration along the way!

LIKES

- Fully-adjustable chassis and race-ready handling
- Great-looking Alfa body, factory graphics and chrome wheels
- Excellent JR Racing radio gear with high-torque servo

DISLIKES

- Low-hanging motor is easily dinged.

YOU'LL NEED

- 6-cell stick pack
- Charger
- 8 AA batteries



WE USED

- Trinity Time Warp 1900mAh
- MRC Super Brain 969
- Trinity GP2300 rechargeables



THE COMPETITION

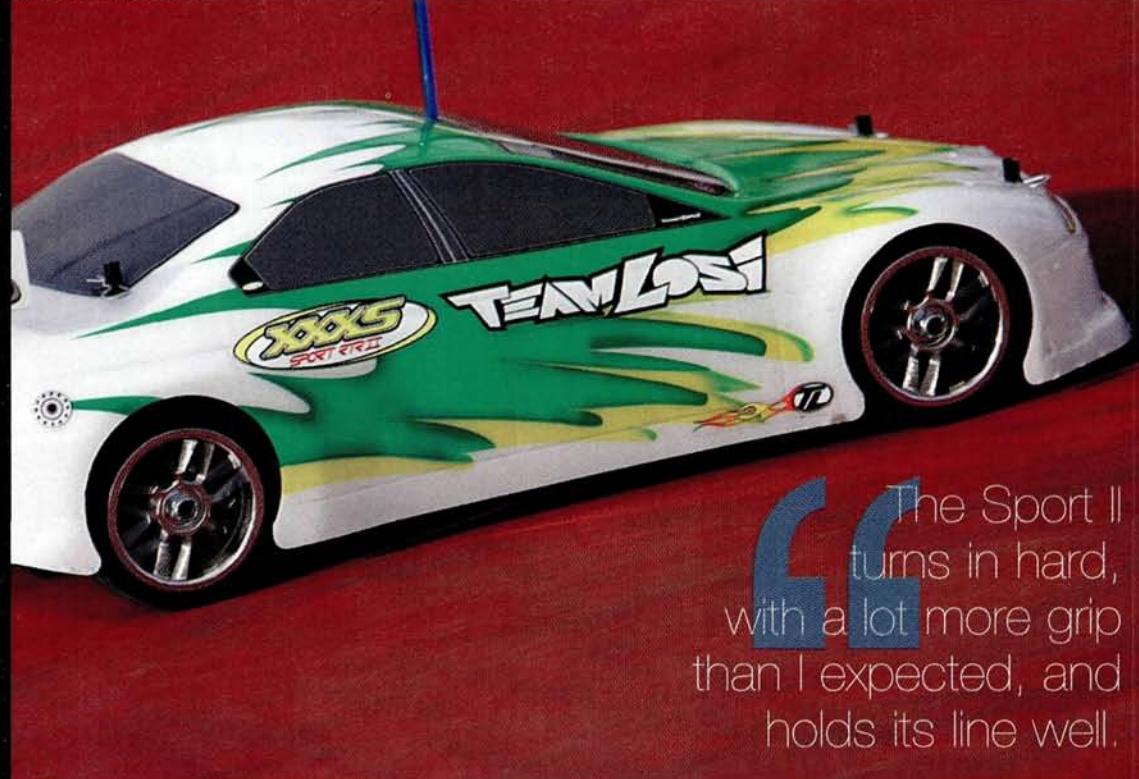
VEHICLE	REVIEWED
Associated TC3 RTR	
Tamiya TT-01 XB	2/03
Traxxas 4-TEC	6/98
Yokomo MR-4TC RTR	

TRIPLE-XS SPORT II

PERFORMANCE

It always bugs me when I flip on an RTR and the radio gear isn't trimmed out properly. No bum-out this time, though; when the Sport II came to life, the wheels were pointing straight, the speed control's "neutral" LED glowed and the controls operated properly. Nothing left to do except pull the trigger! And so I did, with my first pass for radar testing. The Sport II wasn't rocket-quick, but it did move out well and climbed to 22mph (after I freed up the brushes—see "Tuning Tips"). I was surprised by the Sport II's aggressive handling. Either by design or because of tire choice, most of the RTR sedans I've driven tended to understeer, which makes them easier for beginners to control but nowhere near as fun as a neutral or slightly loose-handling car. The Sport II turns in hard, with a lot more grip than I expected, and holds its line well. If you feed in more steering as you stay on the power, the rear end starts to get loose. This helps the car carry speed well through the turns and also makes driving more fun. You can kick the rear end out and slide it around car-chase style—tough on tires, but it looks great.

Most Sport II's will likely see more parking lot and driveway duty than track time, so I didn't spare the car from real-world car wreckers such as curbs, cracks, pebbles and sand. Cars with exposed belts are notoriously prone to damage due to debris, but the Sport II's enclosed single-belt system is sand-and-pebble proof. The motor is less well protected. It hangs about $\frac{1}{2}$ millimeter below the chassis,



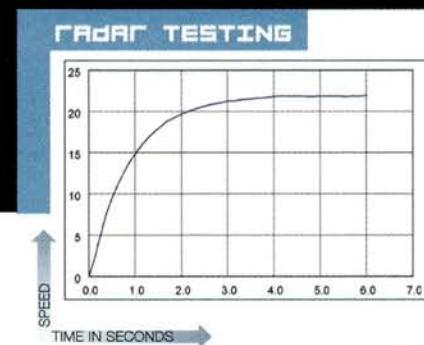
The Sport II turns in hard, with a lot more grip than I expected, and holds its line well.

and it showed a few dings after hopping down a few curbs and rattling over pebbles. That was the only damage encountered in testing.

All of the Sport II's electronic gear performed well. I've never complained about standard-type servos in RTR touring cars, but having a more powerful unit like the Z590M really helps in the handling department, especially when you've got a car that's as capable as the Triple-XS. The speed control didn't mind nonstop running through three packs (although it did get pretty warm), and the JR radio system was foolproof.

THE VERDICT

Losi's Sport-series vehicles have been at the top of my favorite RTRs' list since they came out (we even named the Triple-XNT Sport "Truck of the Year" in 2002), and the new "II" upgrades are just that much extra polish. For on-road fans, the Triple-XS Sport II is difficult to top. It's completely adjustable for the track, yet tough enough for curb commandos and is loaded with great gear that all drivers will appreciate. But perhaps most important, it's got staying power. You can upgrade the Sport II with any of Team Losi's parts or aftermarket pieces; the drivetrain can handle as much motor as you like, and since it's a competition car at heart, your skills won't outgrow the chassis. It will be a long time before you start looking for a second car if your first is a Triple-XS Sport II. ■



Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. > 23	4.9 SEC.	21.9 MPH
2 SEC. > 39.1		
3 SEC. > 69.4	Time to top speed	Top speed
4 SEC. > 101		
5 SEC. > 133	6 SEC.	21.9 MPH

OFIND IT

» Go to page 234 for manufacturers' contact information.

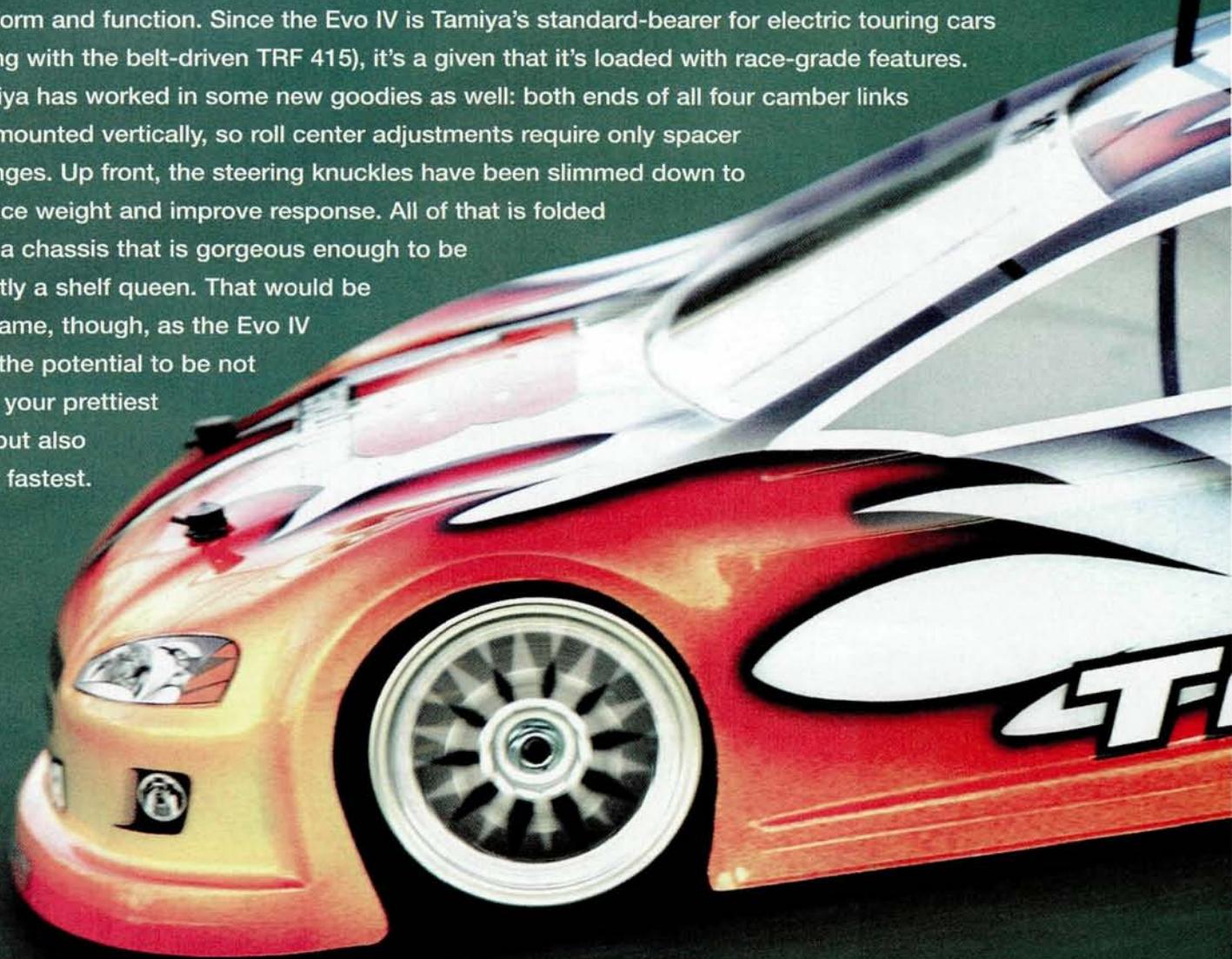
RATINGS

Instructions	●●●●●●●●●●	Includes an assembly manual, radio manual and "operation guide," but no speed-control manual.
Included electronics	●●●●●●●●●●	Losi specs much better stuff than most RTRs, but the Sport II could use a hotter motor.
Parts fit & finish	●●●●●●●●●●	Nice molded parts, bright chrome and excellent body. I knocked off a point for decals-as-windows.
Turn-in	●●●●●●●●●●	Surprisingly aggressive for an RTR—must be that racing heritage coming through.
Corner speed	●●●●●●●●●●	Carries speed very well through sweepers but will oversteer if pushed hard.
On-power steering	●●●●●●●●●●	Lots of steering. You can take the Triple-XS out of the race, but you can't take the race out of the Triple-XS.
Braking	●●●●●●●●●●	Excellent control, and the double-pump reverse system means reverse doesn't interfere with braking.

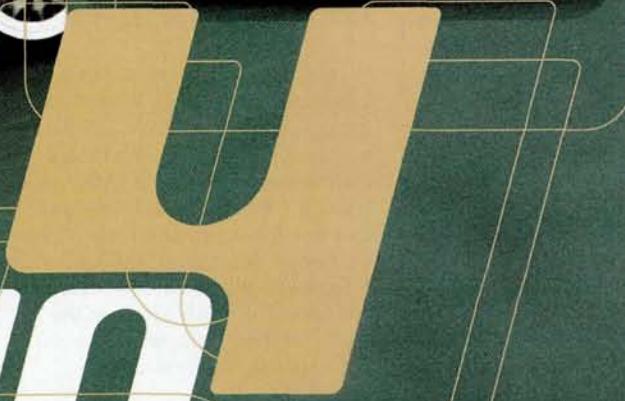
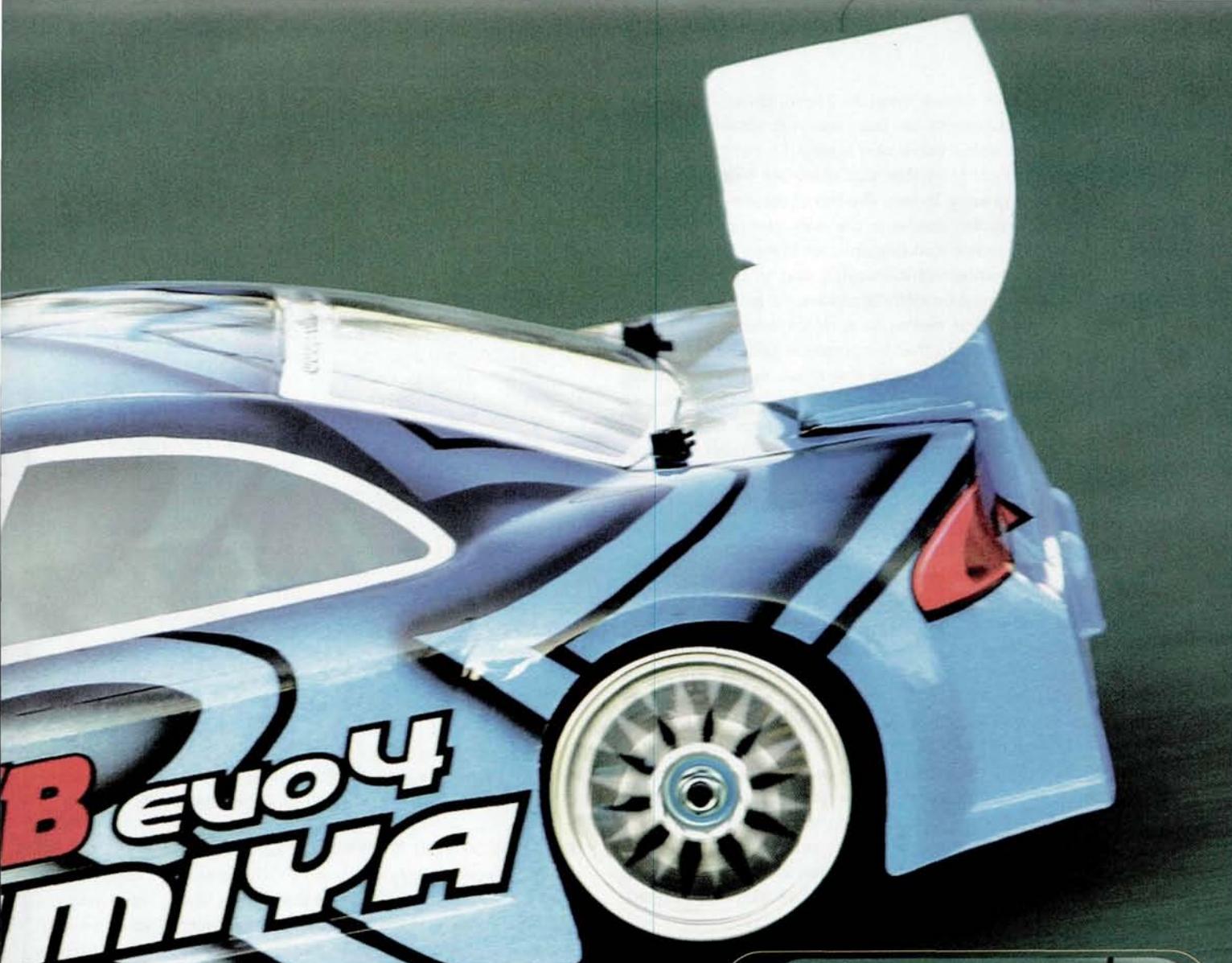
Best buyer» Electric-sedan fans with an eye on competition

Tamiya hones the ever-evolving Evo into an even sharper racetrack weapon

When it comes to exquisite workmanship and exceptional parts quality, few brands can match Tamiya. With its brand-new TB Evolution IV, Tamiya has set a new standard for blending form and function. Since the Evo IV is Tamiya's standard-bearer for electric touring cars (along with the belt-driven TRF 415), it's a given that it's loaded with race-grade features. Tamiya has worked in some new goodies as well: both ends of all four camber links are mounted vertically, so roll center adjustments require only spacer changes. Up front, the steering knuckles have been slimmed down to reduce weight and improve response. All of that is folded into a chassis that is gorgeous enough to be strictly a shelf queen. That would be a shame, though, as the Evo IV has the potential to be not only your prettiest car but also your fastest.



Tamiya *tb* evo



lution

KIT FEATURES

CHASSIS. The Evo IV uses a graphite 2.5mm chassis plate, and a 2mm upper plate connects the front and rear differential housings, motor mount, spine brace and steering-mount posts. This makes a very rigid platform that still manages to preserve the car's low center of gravity. In fact, the top of the brace sits lower than the top of the motor. Spaces in the main plate are machined out to position the motor and batteries as low as possible. The bulkheads are blue-anodized aluminum, and in typical Tamiya fashion, the machining is beautifully precise. Of particular note is the single bulkhead that serves as a motor mount and as the housing for the ball bearing that supports the spur gear. By making this all one piece, the Tamiya engineers ensured that the motor-to-drivetrain connection is perfectly rigid and slop-free.

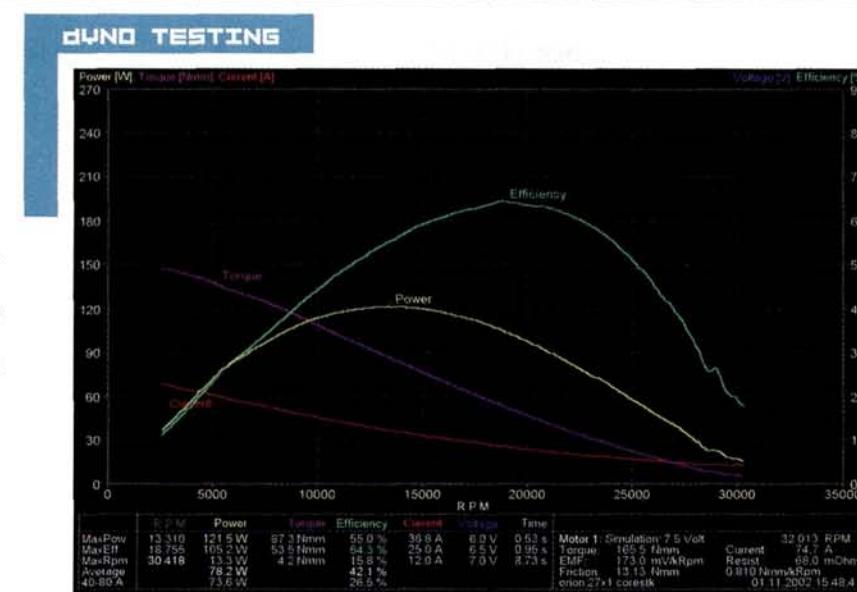
One key item to note is how narrow the chassis is. All of the components have been pushed as far toward the center of the car as possible to reduce the polar moment of inertia, and that improves the handling from corner to corner. The narrowed layout even goes so far as to require that you cut the unused upper portion of the servo-mount flange so that it clears the driveshaft.

DRIVETRAIN. You can't beat shaft drive for keeping the center of gravity down, and I like this type of car because with its few parts and no belt tension to fuss with, it saves building time. Then there is the durability factor; when was the last time you saw a driveshaft tear like belts do? Some claim these have a marginally higher drag, but you wouldn't know it by spinning the Evo IV's driveline. Precision ball bearings throughout and Tamiya's precise parts fit mean that everything turns with silky smoothness. As mentioned, the motor and the spur gear are supported by a one-piece bulkhead. The drivetrain is further strengthened by a carbon-fiber, spur-gear stopper that sandwiches the gears between it and the aluminum mounting disc. The kit provides two spur gears for you to choose from: a 90- and 96-tooth, and the steel pinion has 34 teeth.

In the rear, the ball diff sports plastic outdrives to save weight, and retainer rings reinforce them to prevent any distortion under load. In the front, Tamiya provides a one-way diff to help lay down the power out of the corners. The swing shafts are of the CV-type all around. In front, Tamiya specs steel shafts to withstand the front one-way's yank, while blue-anodized aluminum shafts do the job in the rear, where stresses are lower.

mini test

Team Orion's top stocker was a quick install thanks to its surface-mount capacitors, which saved me a little soldering time. I installed the standard model, but Orion also offers a "Speed Treated" version that fine-tunes performance with diamond-trued comm, zapped magnets and treated bushings. The Core Stock felt quick on the track; for hard data, enjoy the output from our Robitronic Pro Master dyno.



BUILDING AND SETUP TIPS

Tamiya's excellent materials and parts quality, together with the shaft-drive layout, ensure a trouble-free building experience. Take your time, though, because the building sequence is sometimes a bit less than clear. Do so, and you'll have a smooth build and time to admire the peerless machine work of the Evo IV.

USE THREAD-LOCK. High-quality machining doesn't mean much if the parts don't stay screwed together. Be sure to use thread-lock on all the screws that are threaded into those beautiful aluminum bulkheads.

isn't. Note the correct orientation of the short side in the manual.

STEP 12. The servo-saver is installed offset. If you install it straight up, the steering throw will be way off. Just follow the illustration in the manual.

SEAL THE CHASSIS

To prevent the graphite chassis parts from chipping, seal the edges with CA. A cotton swab is the ideal tool for the job.

STEP 7. The left steering bell-crank looks symmetrical, but it

STEP 16. Before you bolt the upper deck into place, screw the antenna mount on first, and then thread the antenna wire through it before screwing the deck in place.

Clamping aluminum hex hubs get the power to the wheels and stay put when it's time for tire changes. I won't miss playing "Find the crosspin" every time I pull the wheels off.

SUSPENSION AND STEERING. The steering setup is another place where Tamiya's superior workmanship shines. The machined-aluminum bellcranks are a work of art; I love how the centers of the arms have been carved out to save weight. Another testimony to Tamiya's determination to minimize weight is the carbon-fiber drag link, and ball bearings ensure that everything glides perfectly. The servo-saver is non-adjustable because it is attached directly to the servo instead of being incorporated into the bellcranks, but Tamiya does supply its stiffest, 3-spring unit.

Evolution isn't just the name of the car; it's also the perfect



SPECIFICATIONS

MANUFACTURER Tamiya

MODEL TB Evolution IV

DISTRIBUTED BY Tamiya USA

SCALE $\frac{1}{10}$

PRICE \$540

(Varies with dealer)

DIMENSIONS

Wheelbase 10.12 in. (257mm)

Width 7.44 in. (189mm)

WEIGHT

Total, as tested 48.4 oz. (1,372g)

CHASSIS

Type Double-deck plate

Material 2.5mm carbon fiber
with 2mm upper deck

DRIVETRAIN

Type 4WD shaft-drive

Primary 34T pinion/96T spur
gear (90T optional)

Transmission ratio 2.29:1

Final drive ratio 6.48:1

(6.07:1 optional)

Driveshafts CV-type

(F/R) steel/aluminum

Differentials (F/R) One-way unit
with aluminum outdrives/ball-diff
with plastic outdrives

Bearing type Metal-shielded
ball bearings

SUSPENSION

Type Molded-graphite lower
H-arms with aluminum turnbuckle
camber links

Shocks Threaded, Teflon-coated
aluminum-body

WHEELS

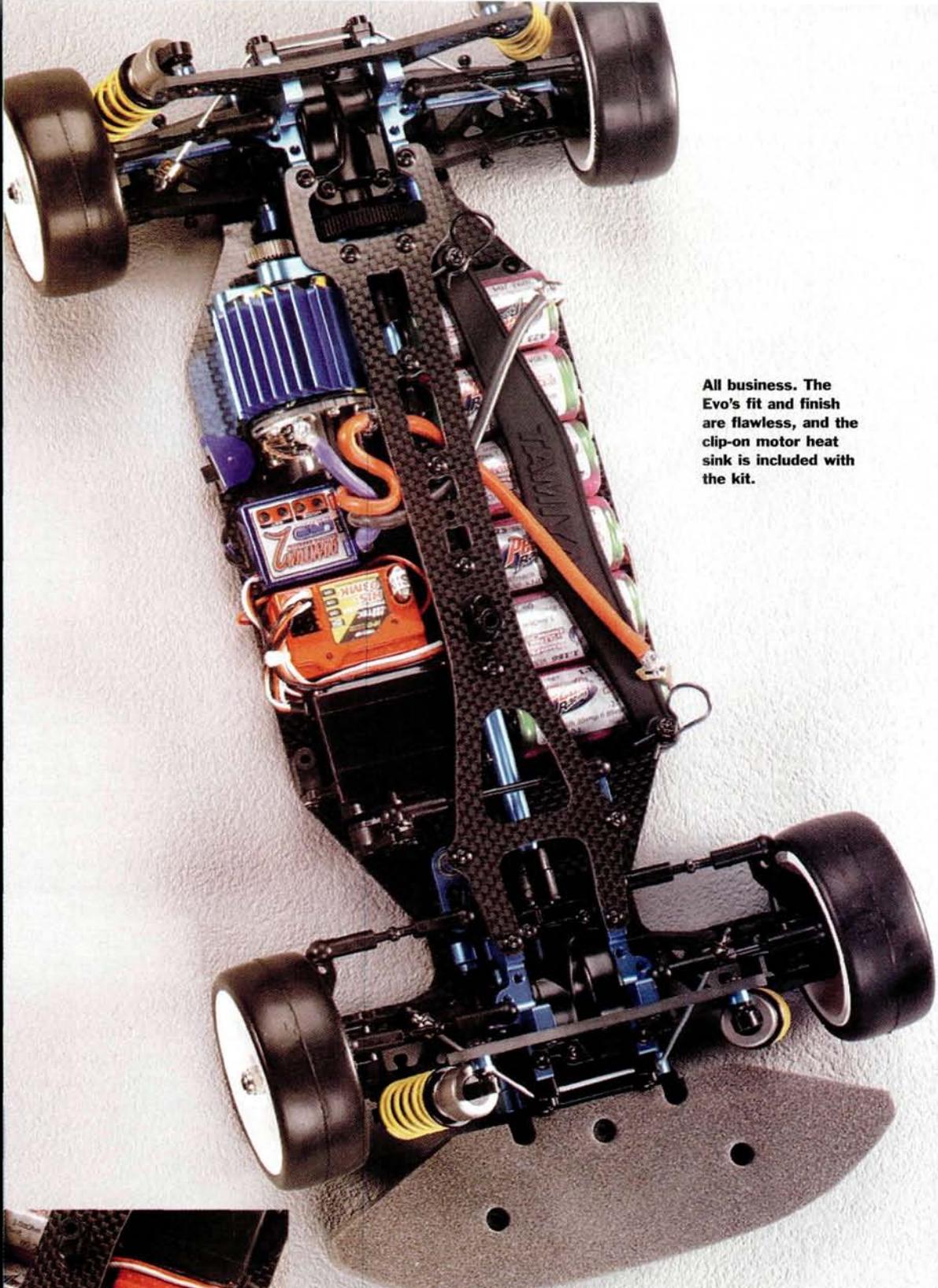
Type Tamiya dish, zero-offset

TIRES

Type Tamiya Type-A belted slicks
with shaped urethane inserts

ELECTRONICS

Not included



Left: there isn't a lot of extra room for the electronic gear. Good thing speedos are a lot smaller than they used to be!

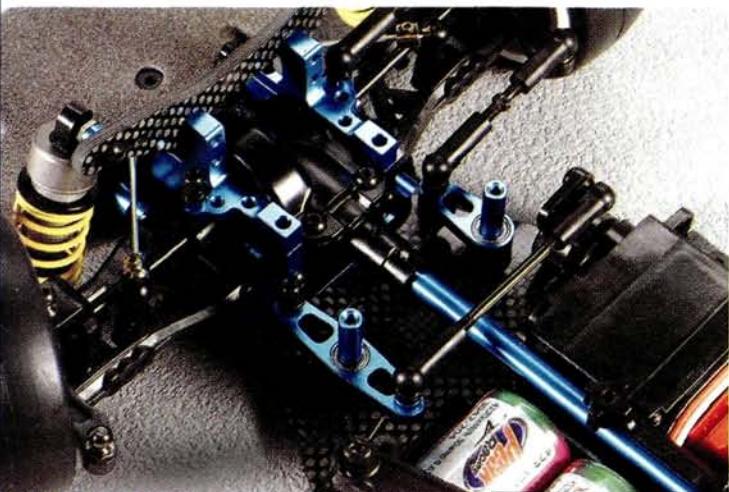
Right: the motor mount and shaft bearing bulkhead are one piece of machined aluminum, so alignment is foolproof.



FACTORY OPTIONS

- Aluminum rear-toe blocks—
item nos. 53712 (0.5°),
53713 (1.0°), 53714 (1.5°),
53715 (2.0°), 53716 (2.5°)

term to describe Tamiya's suspension philosophy. Much will look familiar to previous Tamiya owners, but subtle tweaks have brought significant improvements in key areas. The basic setup is molded-graphite lower H-arms all around, with aluminum turnbuckles for camber links. The rear camber links are the site of one big improvement: the links are now attached vertically both inboard and outboard, and their height is set by precision aluminum spacers—the same pieces that set the wheelbase. To adjust the roll center, just swap spacers. The H-arms swing on steel hingepins and are retained by machined-aluminum mounting blocks. The kit provides a block for 3 degrees of rear toe, and



Above: the diffs now slot into aluminum bulkheads instead of the plastic cases used on the previous TB Evos. Are those the prettiest bellcranks ever or what?

Middle left: precision axle spacers and clamping hex hubs are included in the kit. Note that both ends of the camber link are vertically mounted.

Bottom left: Tamiya's Low Friction Dampers are as smooth as shocks get, and naturally, they've got threaded bodies for fast preload changes. Swaybars and aluminum arm mounts are standard.

LIKES

- Outstanding machine work.
- Superior parts quality.
- Nearly infinite adjustability.
- Shaft-drive durability and simplicity.

DISLIKES

- Steering knuckles don't clear foam tires.

THE COMPETITION

VEHICLE >> REVIEWED

Alex Racing Barracuda R2	>> 1/04
HPI RS4 Pro 4	>> 6/04
Losi Triple-XS Graphite Plus	>> 6/03
Schumacher Mi2 Carbon	>> 10/04
Tamiya TRF 415	>> 9/04
Team Associated TC4	>> 2/05
XRAY T1 Factory Kit	>> 8/04
Yokomo MR-4TC SD CGM	>> 9/04

TB EVOLUTION 4

Tamiya offers optional blocks in 0.5-degree adjustments that can yield additional toe angles from 2.5 degrees all the way down to 0.5 degree. As is now standard practice for touring cars, downtravel is set using droop screws.

The steering knuckles are another area that shows improvement; they have been slimmed down to reduce weight and improve steering response.

Tamiya's TRF shocks are some of the best I've encountered. The precision of the parts makes them easier to assemble than most, and their operation is always silky-smooth thanks to individually-molded Teflon pistons and shaft guides, and Teflon-coated bodies and shafts. Bladders with urethane foam "springs" take care of volume compensation, and threaded preload collars allow precise adjustments. Swaybars are also included to fine-tune handling. The 2.5mm carbon-fiber shock towers have nice, low profiles; the front has four mounting positions, and the back has five.

the clean machining of the parts and the elegant design make this as attractive a sedan as you'll find.

BODY, WHEELS AND TIRES. Tamiya knows racers prefer to choose a body according to their own driving style and handling needs, so none is provided. I chose Pro-Line Racing's Protoform Stratus 3.0 shell, as it is one of the hottest carpet-racing bodies out there at the time of this writing. I enlisted Doug Summers at BODZ to give it a paint job befitting a pro-touring car of the Evo's caliber.

For tires, Tamiya provides a set of medium Type A belted rubber slicks, molded-urethane inserts and zero-offset dish wheels (which I traded for RPM Avengers to give the photo shoot pics a little more drama). Since I planned to race on carpet, I looked to swap on some foamies, and that's where things got a little complicated. Because of the steering-knuckle's shape, foam tires at their stock 28mm width won't fit, even with the wheels spaced out on the axles. Not cool. Tamiya really should design knuckles that will clear the type of tires everyone will want to race on. In the end, I ran TRC foamies for track testing: Plaid fronts, Purple rears. To make them fit, I narrowed the front rims by about 2mm.

YOU'LL NEED

- Speed control
- Transmitter and receiver

Steering servo

- Motor
- Battery
- Charger
- Tire glue
- Body

WE USED

LRP Quantum Competition 2	Hitec CRX with Hitec HIS-03MK receiver
KO Propo model PDS-2144 high-torque digital	Team Orion Core Stock
Peak Racing 3300 NiMH	MRC Super Brain 969 Pro
MRC Super Brain 969 Pro	Team Losi Bead-lock
Pro-Line Racing Stratus 3.0	Super Brain 969



PERFORMANCE

Tamiya is one of those brands where you know that if you build the kit as directed, the car will turn out square and ready to run hard. Such was the case with my Evo IV. Apart from lowering the ride height from the slightly conservative setting specified in the instructions, I ran this car just as it went together. The test track was a grippy carpet course at Hobby Chamber in West Haven, CT. With a fresh charge in the Peak GP3300 batteries, I babied the car for a few laps to get comfortable with it. On Hobby Chamber's somewhat tight layout, I was leery of the one-way that comes with the Evo, so I put traction compound on the rear tires to work in a little safety understeer.

The Evo felt great on the track, and I built up its speed quickly. It tracks straight under full throttle, and there's only a little torque-steer under acceleration—certainly no more than that found on any other shaft-drive car. Since I tend to roll into corners rather than jam on the brakes, I didn't feel the one-way going in. But as the Evo powered out of the corners, I could definitely feel it help pull me out. The steering stayed responsive all the way through the corner with the power on or off.

The stock springs and swaybars are a bit soft for the high-bite surface I tested on, but they are perfect for parking lots or other outdoor surfaces. On carpet, they let the car roll a little too much. It never felt

seriously unsettled, but I sometimes had to wait to get back on the throttle; if I didn't, the inside rear wheel would unload and slightly diff out. A simple switch to stiffer springs (Team Associated coppers) fixed that right up; the car took a set sooner and held it, and that allowed me to power out of corners much more easily. The Evo still had a slight push exiting tight corners, but that was because I hadn't put compound on the front tires. With the spring change, it stayed dead neutral through fast corners and steered well enough to let me adjust my line mid-corner. Overall, the Evo rotated around even the tightest corners with ease, scrubbed very little speed, and there was no need to throw this car around to get it to transition from one corner to the next.

I was gratified by how communicative the Evo is; it responds clearly and predictably to changes. When you make an adjustment, you feel the results right away. That was a huge help as I tried to figure out what this car likes and how best to adapt it to my driving style. For now, I have to do my own experimenting because there are no setup notes with the car, and not much info about it is out there yet. I imagine this would be an easy car to over-adjust, so I plan to take it slow. Besides, when a car feels this good out of the box, I'd be crazy to mess with it too much.



THE VERDICT

For me, Tamiya's TB Evolution IV is the ultimate no-compromises electric touring car. It has everything I could ask for in a competition vehicle from a performance standpoint: shaft drive, inspired engineering, first-rate materials, immaculate workmanship and nearly infinite adjustability. All that adds up to stellar on-track performance—you expected anything less? Those qualities make it appealing from an aesthetic view as well; the clean machining

of the parts and the elegant design make this as attractive a sedan as you'll find. And that fine Tamiya workmanship ensures that the car will practically fall together during the assembly. The only blemish is the wheel issue, but it is surmountable, and even forgivable, given the Evo's other virtues. Of course, all that form and function comes at a price—one that's higher than nearly all of its competition. But we said no compromises, right? ■

FIND IT

» Go to page 234 for manufacturers' contact information.

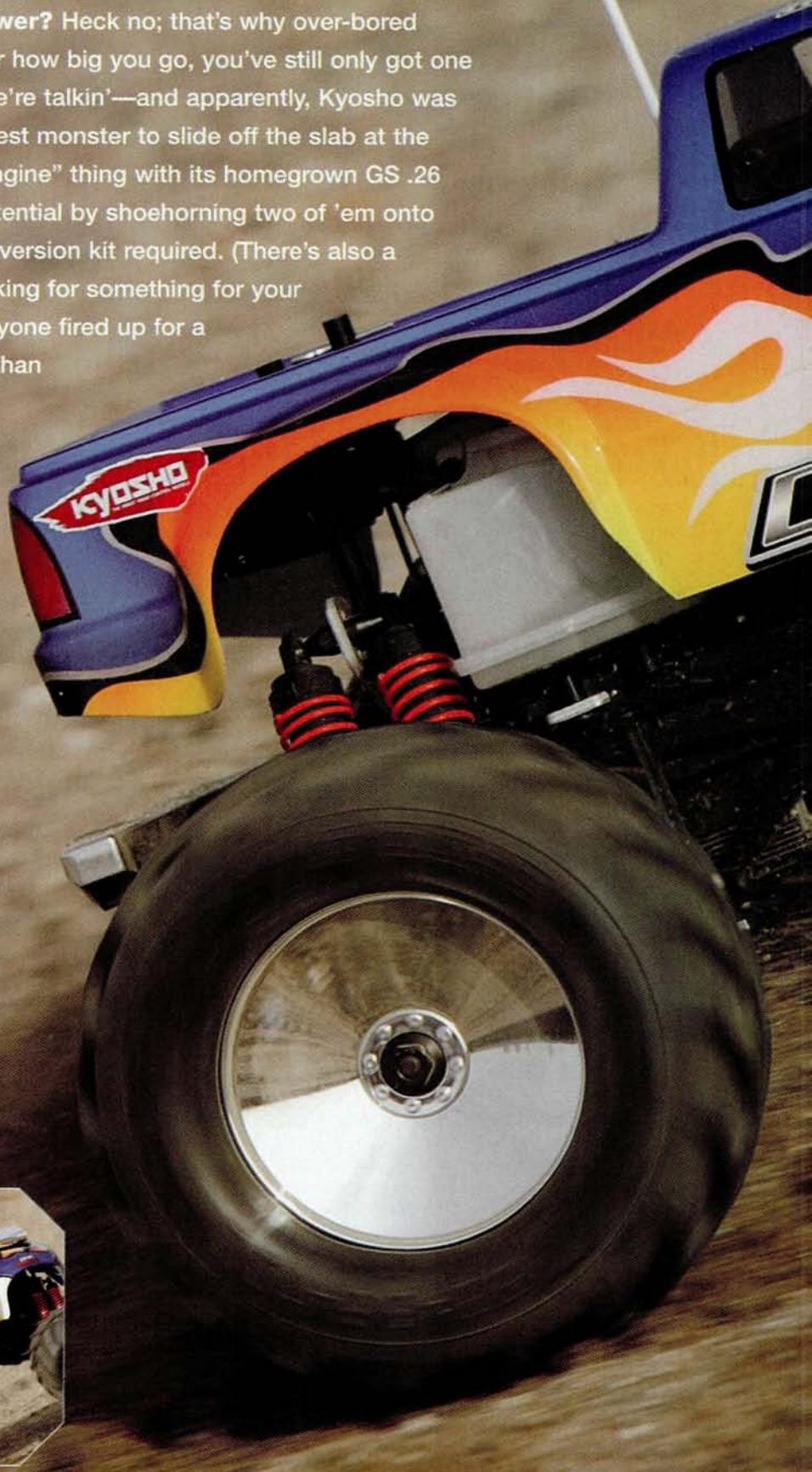
RATINGS

Instructions	●●●●●●●●●●	8.5	Clear illustrations with lots of detail, but sparse verbal instructions.
Parts fit & finish	●●●●●●●●●●	10	As good as it gets. Jewel-like finishes and perfect fit throughout.
Turn in	●●●●●●●●●●	9.5	Sharp but not darty; you can carry tons of speed into a corner without fear.
Corner speed	●●●●●●●●●●	9	Carries speed well, but the stock springs let it roll over a little too much on high-grip surfaces.
On-power steering	●●●●●●●●●●	8.5	Not much torque-steer, but it's a bit pushy when powering out of tight corners.

Best buyer» Well-funded racers, Tamiya fans, and anyone who appreciates having the best of the best.

Kyosho's latest crusher explodes with dual-engine dynamite

Is there such a thing as too much power? Heck no; that's why over-bored big-blocks are all the rage. But no matter how big you go, you've still only got one engine. How about two engines? Now we're talkin'—and apparently, Kyosho was listening. The Giga Crusher, Kyosho's latest monster to slide off the slab at the company's monster lab, does the "big engine" thing with its homegrown GS .26 powerplant, but it doubles the power potential by shoehorning two of 'em onto the chassis as stock equipment—no conversion kit required. (There's also a single-engine version, in case you're looking for something for your sister to drive.) That's enough top get anyone fired up for a test drive, but the Giga Crusher is more than a couple of engines. It's loaded with features such as a 3-speed tranny reverse and 8-shock independent suspension. Plus, it's a kit! Time to tear open some polybags.





Kyosho

GIGA CRUSHER

KIT FEATURES

CHASSIS. Anything that has to support the weight and power of two big-block engines has to be strong. The stamped-aluminum plate has notches on its sides that fit into slots on the truck's molded frames. The frames have trusses molded into them so they resemble the side plates that are sometimes used on full-size monsters. This setup makes for a very sturdy frame, but be careful: the aluminum chassis tabs extend past the frames, and their sharp edges could be hazardous to your fingers. The layout of the chassis is completely different from any truck on the market. The engines sit up front while the fuel tanks are in the rear. There isn't a whole lot of room on the top of the chassis for the servos, so they are mounted below it. Two molded side plates are mounted on the top center of the chassis, and a few cross-members connect them to each other. They resemble a full-size roll cage and protect the heads of the engines, and the rear cross-member makes a good handle. A sealed box is found in each of the top side plates, and they give you a place to mount the receiver and receiver pack since there's no room in the chassis. Molded skidplates protect the front and rear of the truck, and chrome plastic bumpers dress it up.

DRIVETRAIN. When I opened the box, I was pleasantly surprised to see that the diffs, the center transmission and the 3-speed come completely assembled. Sweet! That knocks off a ton of building time. The engines get the drivetrain spinning through a pair of 2-shoe clutches and 3-gear clutch bells. A 3-speed, finger-type transmission can be found between the two clutch bells, and since dirt and multispeed transmissions don't mix, a molded plastic housing keeps the tranny out of the elements. A slipper clutch with the stiffest spring I've seen on any RC vehicle protects the internal gears and rests on the back of the transmission. When you open the center transmission case, you are greeted by a lot of gears: one set for forward and another for reverse. The gears have 2-module (metric for "burly") teeth, and they're superwide to handle the torque the engines put out. A pair of vented-steel disc brakes slow the heavy truck down quickly, and a heat sink behind the calipers keeps them cool. Heavy-duty dogbones spread the rotation of the transmission to the front and rear gear differentials. The diffs are similar to those used in Kyosho's MP 777 except they are 4-gear units instead of 6-gear, and they come packed with grease. Don't worry; they are sealed and can be tuned with silicone fluid. Once again, dogbones drive the axles by way of the diffs, and 19mm hexes spin the wheels. Kyosho was smart and designed the 19mm hexes to fit over smaller 14mm hexes, so the Giga C can wear any Maxx-size wheels; just remove the outer 19mm hex. Metal-shielded ball bearings smooth out the



Left: check it out! All of this stuff comes built for you.

Right: dual-disc brakes slow the truck down, and the heat sink behind them helps keep them cool.

BUILDING AND SETUP TIPS

Some parts of the truck come assembled for you, and that saves a ton of building time. Due to the complexity of the truck, I suggest that you follow the instruction manual to a tee. If you don't, you'll be removing parts to install parts, and trust me, that gets old fast. If you're an experienced kit builder, you won't have too much trouble building the Giga Crusher, but if you aren't, you may have a little trouble because of some sections of the manual are a bit vague. Here are a few things to help you with your build.

USE THREAD-LOCK. Don't forget to use thread-lock on metal-to-metal connections. Otherwise, the vibration of the engines will cause screws and nuts to vibrate loose.

STEPS 1 & 2. Pay close attention to the orientation of the diff cases when you install them into the bulkheads. If you put them both in backwards, the truck will have permanent reverse. If you install one backwards, it will fight the opposite axle.

STEP 12. When you install the receiver and battery box, make sure that you put the receiver box (the thinner one) on the right side of the truck and the battery box on the left. Pay attention to the dip on the inside of each box: it should be on top to provide clearance for the tuned pipes.

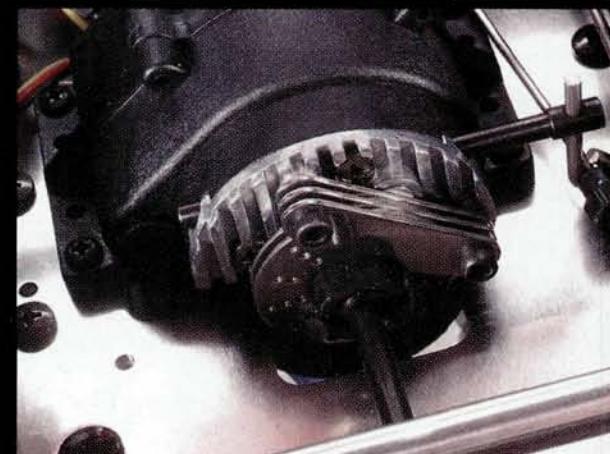
STEP 30. Before you mount the engines, put them in the truck, and check the angle of the carbs. They should be angled slightly so the slide on the right engine and both linkages clear them.

STEP 32. Install a spring on the outside of each throttle linkage to hold the carbs closed in the idle position. That will allow you to adjust the idle on each engine independently. One may require one turn of the idle screw to keep it running properly, and the other may require two.

STEP 35. When you install the rubber mufflers, make sure that you clean the inside of the muffler and outside of the pipe thoroughly with motor spray. Use a fat zip-tie to hold the muffler on the pipe as well. When oil from the exhaust hits that section, it can cause the muffler to come off.

STEP 38. Don't forget to oil the air filter before you install it in the truck. You have two engines sucking air and dirt into the filter, and that oil will help keep fine dirt out. The kit doesn't include oil, but you can get the correct lube from Kyosho, Team Associated, Fantom Racing, DuraTrax and others.

drivetrain. Good enough, but rubber-sealed would be more appropriate for this and any other nitro monster.



SPECIFICATIONS

MANUFACTURER Kyosho

MODEL Giga Crusher

SCALE $\frac{1}{8}$

PRICE \$650

Varies with dealer

DIMENSIONS

Wheelbase 13.8 in. (350mm)

Width 16.7 in. (425mm)

WEIGHT

Total, as tested 224 oz. (6,350g)

CHASSIS

Type Stamped plate with
molded side plates

Material 3mm aluminum

DRIVETRAIN

Type Shaft-drive with rear-mounted
reversing transmission

Primary 14/17/20T clutch bells

40/43/46T spur gears

Transmission ratio 7.718:1

Final drive ratio (1st, 2nd, 3rd)
25.36, 19.52, 15.44:1

Driveshafts Dogbones

Differentials Silicone-filled,
bevel-gear

Bearing type Metal-shielded,
ball bearings

SUSPENSION

Type Lower H-arm with
fixed upper link

Shocks Bottom-filled, plastic-body

WHEELS

Type Chrome dish

TIRES

Type Chevron-tread with foam
inserts

ENGINE AND ACCESSORIES

Engine 2 Kyosho GS .26,
slide-carb, rear-exhaust,
pull-start

Clutch 2-shoe

Manifold Aluminum

Pipe Tuned two-piece aluminum
with rubber mufflers

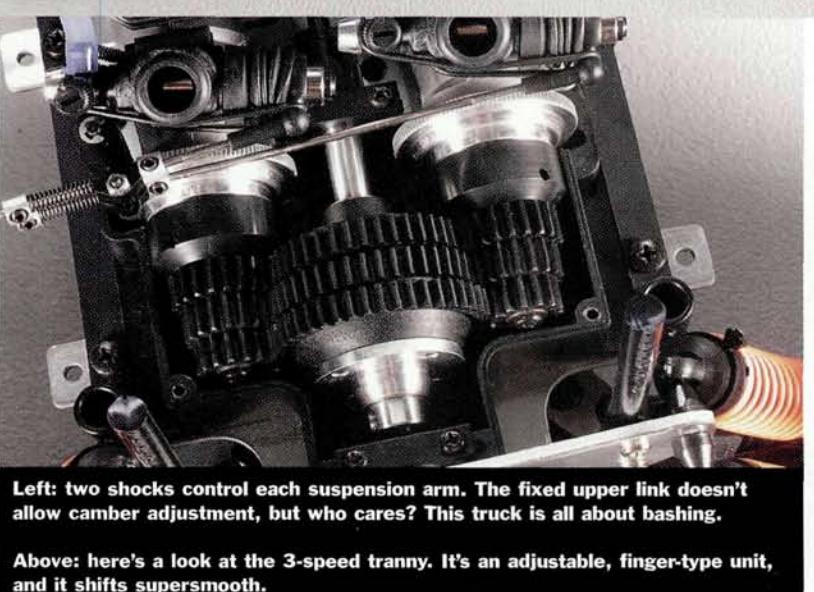
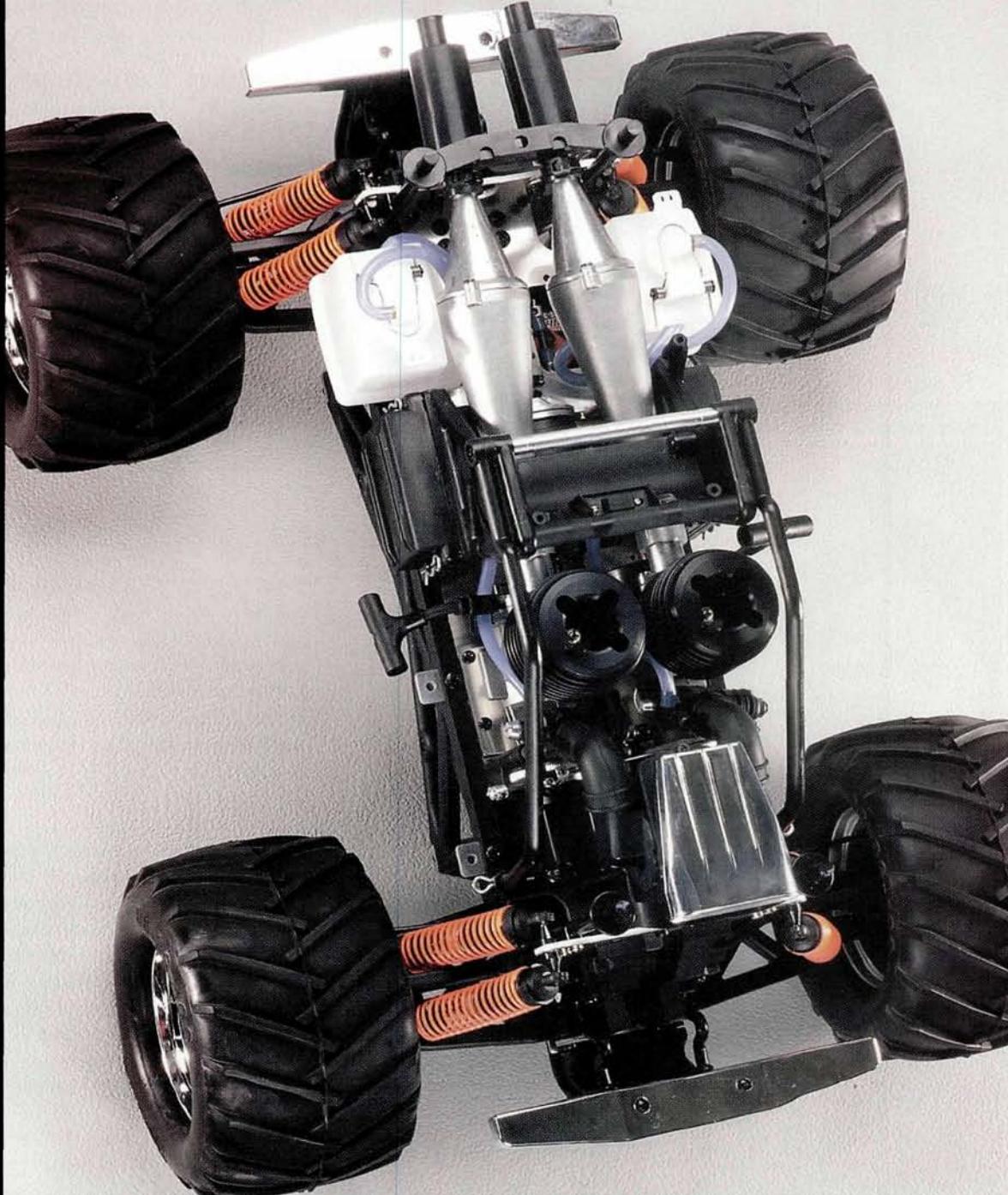
Fuel tank 200cc (dual 100cc
tanks)

ELECTRONICS

Not included

FACTORY OPTIONS

- TCD differential—item no.
IFW118
- Green spring (soft)—IFW32GR
- Blue spring (medium)—IFW32BL
- White spring (hard)—IFW32W
- Ultrasoft spring—MAW005
- 5.8mm steel ball—W0201

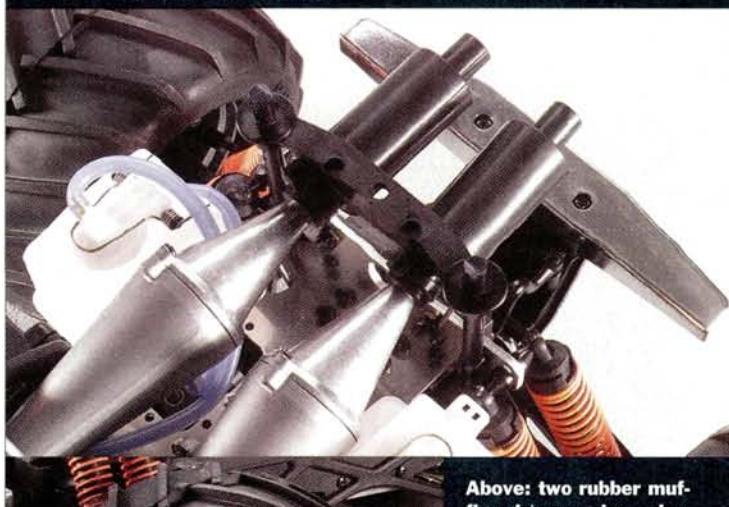


Left: two shocks control each suspension arm. The fixed upper link doesn't allow camber adjustment, but who cares? This truck is all about bashing.

Above: here's a look at the 3-speed tranny. It's an adjustable, finger-type unit, and it shifts supersmooth.



Two .26 engines get this big truck moving. The truck sounds sweet when both engines are running.



Above: two rubber mufflers keep engine noise down, and they direct the exhaust out of the body.

Left: dish wheels dress up the truck, and lightweight chevron-tread tires provide the traction.

Below: nice scoop, eh? It actually doubles as an air intake.



LIKES

- T3-speed tranny.
- Two engines.
- Functional air scoop.

DISLIKES

- Servo-saver is too soft.
- Fuel tanks are too small.

THE COMPETITION

GIGA CRUSHER	VEHICLE ➤ REVIEWED
	HPI Savage 25 ➤ 7/04
	OFNA Titan Twin ➤ 9/03
	Team Associated Monster GT ➤ 12/03
	Team Losi LST ➤ 11/04

FIND IT

➤ Go to page 234 for manufacturers' contact information.

SUSPENSION AND STEERING. The Giga Crusher uses a simple independent suspension with lower H-arms and fixed-length upper links. A combination of hingepins and screw-type pins holds the suspension arms together. C-hubs can be found at the arm ends, and cast-aluminum steering knuckles support the axles. Two oil-filled shocks control the action of each wheel; the bodies are molded plastic, and clip-on spacers set the truck's ride height.

The steering servo controls the front wheels through a dual-bellcrank system. It's similar to the one used in Kyosho's 1/8-scale off-road buggies. Three mounting positions are available for each steering linkage, and a built-in, adjustable servo-saver in the left bellcrank protects the servo gears.

the finger-type 3-speed shifted so smoothly that I almost couldn't tell when it shifted gears.

ENGINE AND ACCESSORIES. The Giga Crusher's GS .26 engines are modified version of Kyosho's well-proven GS .21 powerplant. I have a lot of experience with the .21 engine, and I expect the over-bored version will be just as reliable. The design features ABC construction and a 2-needle, composite-plastic slide carburetor. A bellcrank with two linkages controls the action of the dual carbs. Engine mounts are noticeably absent; instead, the engines mount to the chassis via bosses cast directly into the bottoms of their blocks.

An air filter isn't usually a feature of note, but the Giga Crusher's is truly unique. Y'know that big chrome-plated blower that pokes so prominently through the hood? It's not just for show—it's a functional air intake! A foam filter element inside the scoop cleans the air that enters it, and two tubes that are connected to a central box under the scoop bring air to the carbs.

The exhaust exits through two straight, multipiece tuned pipes out the back of the truck, and a pair of molded-rubber mufflers on the end of the pipes minimizes the decibel level. Dual 100cc fuel tanks flank the pipes and are molded to wrap under them. The tanks feature large openings and spring-loaded flip-top lids.

BODY, WHEELS AND TIRES. An attractive, trimmed pickup-truck body tops off the big truck, and it comes with protective film over it to keep overspray off the Lexan when you paint it (or, in my case, when Zegers R/C Graffixx paints it). A sticker sheet with window trim, brake lights and grill is also included.

The Giga Crusher's new chevron tires are lightweight and have foam inserts to support the truck's considerable weight. Chrome dish wheels complete the rolling stock.

YOU'LL NEED

Radio	Hitec Aggressor SRX
Steering servo	Hitec HSC-5998TG
Throttle servo	Hitec HSC-5997TG
Reverse servo	Hitec HS-311
Receiver pack	Trinity RC5304 Standard Gas Pack
Fuel	Trinity 20% Monster Horsepower
Air-filter oil	Kyosho Air Cleaner



WE USED

Vehicle	Hitec Aggressor SRX
Steering servo	Hitec HSC-5998TG
Throttle servo	Hitec HSC-5997TG
Reverse servo	Hitec HS-311
Receiver pack	Trinity RC5304 Standard Gas Pack
Fuel	Trinity 20% Monster Horsepower
Air-filter oil	Kyosho Air Cleaner



PERFORMANCE

I broke the engines in one at a time so I could hear and focus my attention on each. Once the engines were ready, I ran each one by itself to fine-tune their respective carbs. When running on one engine, avoid extended blasts of throttle. The clutch bell on the other engine will be spinning at the same rpm as the one that is running. The needle bearings that Kyosho uses in the clutch bells weren't meant to



spin that fast, and you can quickly blow up the bearing on the non-running engine (which I did). Once I was happy with the tune on both carbs, I started them up at the same time and let them both rip. Man, this truck sounds great!

With both engines running, the truck had no trouble spinning the tires, and it wanted to launch with the slightest stab of the trigger. Given the Giga Crusher's nose-heavy, front-engine layout, I didn't expect it to wheelie despite its dual .26 engines. I was wrong, and the big truck easily lifted the front end when traction allowed. On my first run, steering the truck was a problem; the spring on the servo-saver was too loose. I shut the truck down and cranked the adjuster nut down all the way. I wasn't too worried about the gears on the Hitec servo because they're made of titanium. After that, the

steering was more responsive, but the truck pushed, and its turning radius was still very large. If I planned to race this truck, I would be more concerned, but since the Giga Crusher is a fun-truck, it isn't a big deal.

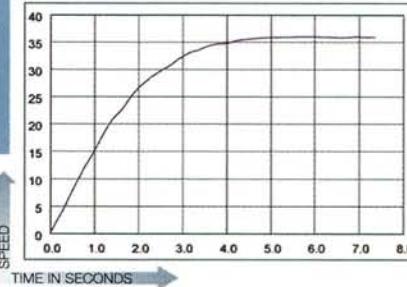
I was worried about slowing the truck, but the superstrong Hitec servo and the vented-steel disc brakes slowed the Giga Crusher down very well. Controlling the brakes took a little getting used to. It didn't take much throw of the trigger to get the brakes to lock up. The suspension is a bit stiff, and it showed when the truck bounced around as it rolled over small bumps. The weight of the transmission and dual engines requires that the suspension be stiff, especially when it comes to absorbing big hits and jumping the truck. Speaking of jumping; that's something the Giga Crusher does surprisingly well. It goes through the air with a level attitude and lands softly.

While I was driving the truck, I noticed that the engines sucked down the fuel in the tanks awfully fast. These tanks are 25cc smaller than the tanks used to feed .21 engines, and the engines are .05cc bigger, so the speedy fuel consumption makes sense. Keep that fuel bottle handy.

Since the Giga Crusher can blast through or over nearly anything, I completely forgot I it had reverse—I never needed it! When the "remember to test reverse" lightbulb finally turned on, I brought the truck to a stop and hit the reverse button; it shifted from forward to reverse smoothly.

Now for the part you've been waiting for: top speed testing. The truck was very stable at speed compared to some twitchy, high-riding big-block trucks I've driven, and the finger-type 3-speed shifted so smoothly that I almost couldn't tell when it shifted gears. With both engines leaned out for maximum speed, the Giga Crusher easily posted consistent 34mph runs, and it had a best blast of 36mph. Let me guess: you thought it would be faster. Truth be told, the Giga Crusher could be geared for more speed, but torque and wheelie-worthy acceleration are much more fun when it comes to monster trucks.

RADAR TESTING



THE VERDICT

The Giga Crusher is a whole lotta truck, especially in dual-engine trim, and it definitely puts a capital "M" on Monster truck. There is a single-speed version, but I think the twofer is the way to go. The truck is built for 'em, and since it's a lot heavier than it needs to be for single-engine power, performance suffers with one thumper on board. But with two .26s screaming, the Giga Crusher is a potent blend of excess and excitement. ■

Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. ▶ 21.7	3.9 SEC.	34.7 MPH
2 SEC. ▶ 43.3		
3 SEC. ▶ 66.9		
4 SEC. ▶ 136.7	Time to top speed	Top speed
5 SEC. ▶ 188.8	6.9 SEC.	36 MPH

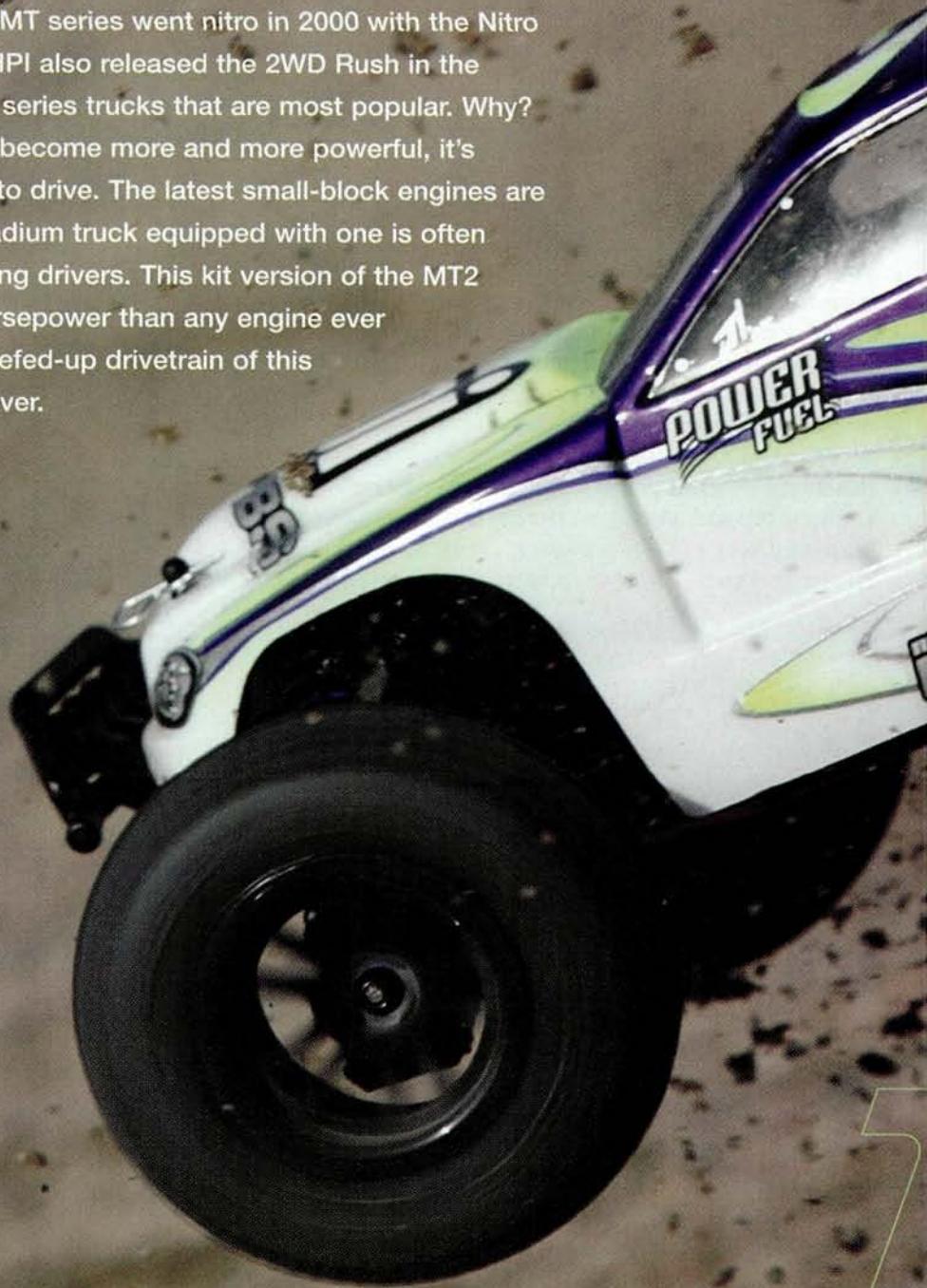
RATINGS

Instructions	●●●●●●●●	Some of the drawings could use a little text to explain what is going on.
Parts fit & finish	●●●●●●●●	All of the parts are nicely finished and didn't require any tweaking to fit together.
Turn-in	●●●●●●●●	Crank down the servo-saver for best steering response, but expect a lot of push.
Corner speed	●●●●●●●●	The truck has a low CG, and it's pretty wide, so it's able to carry speed well.
On-power steering	●●●●●●●●	The truck has a slight push, and the servo-saver makes it difficult to turn the truck.
Braking	●●●●●●●●	Fine control could be better, but stopping power is great. It's easy to lock up the tires.
Bump handling	●●●●●●●●	Stiff suspension is good for big hits, but small bumps bounced the truck around.
Jumping	●●●●●●●●	The truck goes through the air well, but watch out for that throttle and brake. Landings are smooth.

Best buyer»» Any monster truck guy who likes to build and thinks too much power is just enough.

HPI Kicks It Up a Notch with Outlaw Power

When HPI introduced the original RS4 MT way back in 1998, its 4WD system set it apart from the 2WD stadium-truck standard. According to HPI, its primary reason for going 4WD was to make the truck more controllable and easier to drive—in short, more user-friendly. Four-wheel drive's user-friendliness was even more appreciated when the MT series went nitro in 2000 with the Nitro MT, which was followed by the MT2. HPI also released the 2WD Rush in the same time frame, but it's the 4WD MT series trucks that are most popular. Why? They're easy to drive. And as engines become more and more powerful, it's essential that stadium trucks be easy to drive. The latest small-block engines are so powerful that controlling a 2WD stadium truck equipped with one is often beyond the skills of even the best racing drivers. This kit version of the MT2 packs a .18 ABC engine with more horsepower than any engine ever included in a nitro MT truck, so the beefed-up drivetrain of this 4WD machine is more essential than ever.





NITRO MT2
HPI 18SS
Super Sport

KIT FEATURES

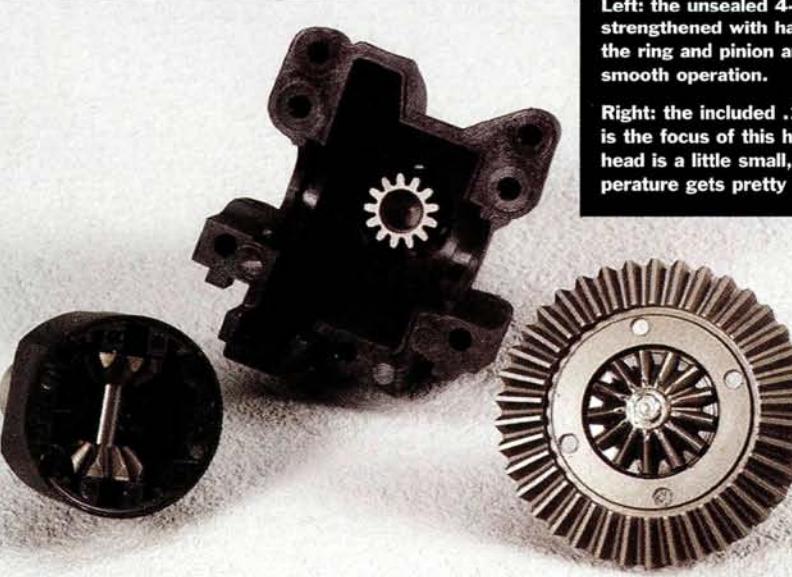
CHASSIS. The main chassis plate is made of 2.5mm purple-anodized 6061 aluminum. Most of the screw holes are countersunk to keep the screw heads flush with the bottom of the chassis. Button-head screws secure the engine mounts to the chassis, and they, too, are countersunk, but their heads still protrude slightly from the chassis' surface. The guard that covers the opening in the chassis under the spur gear is also below the bottom of the chassis plate. This guard protects the spur gear from debris that might foul the gears from below, but it may also make it more difficult for debris that comes from above to pass through. I could run the truck without this guard, but for the moment, I'll leave it in place.

The lower chassis plate is supported by a molded spine that runs between the front and rear differentials. The radio plate also strengthens the chassis and is a key feature that allows all the radio gear to be removed easily for cleaning without any risk of fouling the electronics. The radio receiver and battery are in a radio-plate compartment, and though it isn't waterproof, it protects the receiver by significantly reducing its exposure to such things as water and nitro cleaner.

DRIVETRAIN. We're familiar with the "SS" moniker of this new MT because of the Savage SS. It indicates a kit version that includes a number of high-performance factory options. The 18SS has a drivetrain that's beefed up to handle the extra power of the included .18 engine.

Shaft drive is essential for rough off-road terrain, and the MT2's is strong and virtually impervious to dirt and debris that would quickly kill a more exposed drivetrain. The 18SS includes diffs that feature stronger, machined-steel ring and pinion gears that run more smoothly. They are 4-gear diffs instead of the 6-gear units that are common in $\frac{1}{8}$ buggies, but the internal diff gears have been hardened by means of a heat-treating process to increase their durability. The diffs are greased during assembly, but there aren't any O-ring seals, so don't expect silicone fluid to stay inside the diff housing if you try to get creative and use it to tune the diff action.

The 18SS's single-speed setup features a really stout slipper assembly that first saw service on the big Savage monster truck. The center housing can accommodate a 2-speed transmission, but that's a factory option. The center driveshafts are conventional dogbones, but HPI's CV driveshafts are included for the



Left: the unsealed 4-gear differentials are strengthened with hardened-steel gears; the ring and pinion are machined for smooth operation.

Right: the included .18 SS Ultaw engine is the focus of this hot-rod MT2 kit. The head is a little small, so the engine's temperature gets pretty high.

BUILDING AND SETUP TIPS

Assembling the 18SS kit goes pretty smoothly. The instructions have detailed illustrations, and there's sequence information for steps in which it's important to install components in a specific order. There's also a lot of information in the front and back of the instruction booklet that will help even beginners to get this thing put together relatively easily.

STEP 5. Push the 10mm locknut onto the shaft. There's a spring clip built into the locknut, and it must be forced onto the shaft. Also, use thread-locker on the setscrews and pins that secure the center driveshafts' drive cups.

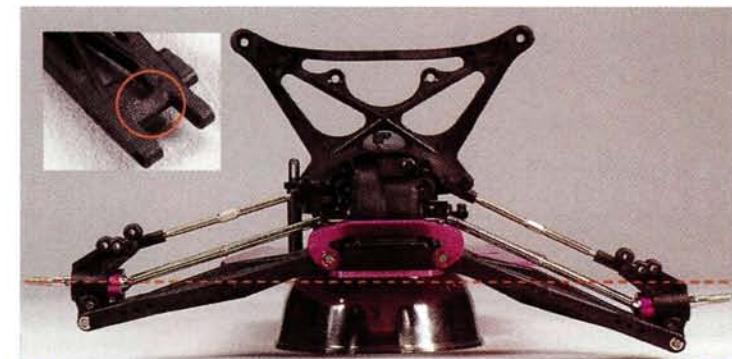
STEP 15. Remove a little material from the bottom edges of the front shock tower to create a little more clearance between it and the drive cups.

STEP 44. Use a very strong tire glue such as Team Losi's Blue Tread Lock to glue the Dirt Bonz tires to the rims. The tire

bead doesn't completely seat on the rim, and a good glue bond is pretty important if you want to keep the tires attached.

INCREASE SUSPENSION TRAVEL.

You can increase travel by mounting the lower end of the shocks in one of the mounting holes instead of on the hingepin. Doing so causes the HPI CV driveshaft to contact the suspension arm. A quick modification to the suspension arm (see inset) using a sanding drum on a Dremel tool, allows the additional clearance needed to keep things rolling smoothly.



If you modify the suspension arms (inset), you can get a little extra travel. Note "before" (left side) and "after" (right side).



SPECIFICATIONS

MANUFACTURER HPI Racing

MODEL Nitro MT2 18SS

SCALE $\frac{1}{10}$

PRICE \$350

Varies with dealer

DIMENSIONS

Wheelbase 11.75 in. (298mm)

Width 12.5 in. (317mm)

WEIGHT

Total, as tested 79.2 oz. (2,245g)

CHASSIS

Type Channeled lower plate with upper deck.

Material 2.5mm purple-anodized aluminum and molded composite

DRIVETRAIN

Type Shaft-driven 4WD

Primary 15T clutch bell/49T spur gear

Transmission ratio 2.923:1

Final drive ratio 9.55:1

Driveshafts (F/R) HPI CVs

Differentials Four-gear with machined-steel ring and pinion gears

Bearing type Rubber-sealed ball bearings

SUSPENSION

Type (F/R) Lower H-arm/turnbuckle upper links

Shocks Molded-plastic oil shocks

WHEELS

Type HPI Split black 5-spoke

TIRES

Type HPI Dirt Bonz tires with foam inserts

ENGINE & ACCESSORIES

Engine HPI .18SS outlaw, slide carb, side exhaust, pull-starter

Clutch 2-shoe

Manifold Side-exhaust bent-aluminum tube

Pipe Molded plastic with integral pressure fitting

Fuel tank 100cc primerless with internal sintered filter.

ELECTRONICS

Not included

FACTORY OPTIONS

- Aluminum tuned pipe—item no. A940
- Nitro racing clutch—A885
- Woven-graphite shock towers (F/R)—73096/73097
- Fiber brake disc—A844
- Stainless-steel hingepins—72229
- Titanium turnbuckle set—72227
- MIP CVD driveshafts—80873, 80874
- Threaded-aluminum shock sets (F/R)—A718/A710



Above: to clean the radio tray, remove three clips and a screw, and take the tray off the chassis.

Left: a molded skidplate helps to protect the spur gear from debris that would otherwise enter the chassis from below.

suspension. You'll find upgraded HPI hardened drive cups throughout the drivetrain.

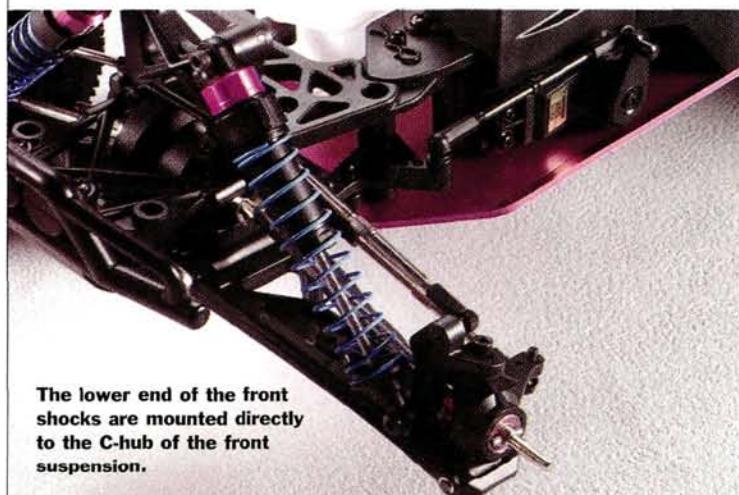
The fiberglass brake disc is carried over from the RTR; I was hoping for a more durable and consistent steel disc. The similar brake disc on the Savage tends to wear out and sometimes delaminates with heavy use. The 18SS truck is much lighter than the Savage, so I hope that will extend the brake's life.

ENGINE AND ACCESSORIES. A new HPI pull-start 18SS Outlaw engine is included. This engine is very similar to the optional HPI Nitro Star 18SS engine, with the exception of the cylinder head. The .18 engine boasts a durable, chrome-plated brass piston sleeve (better known as "ABC" construction) and pretty aggressive port timing and compression, so it pushes a lot more horsepower than the engines in HPI's previous nitro MT trucks. A 2-needle rotary carb takes care of the air and fuel delivery.

The engine is attached to the chassis with separate engine mounts that allow gear-mesh adjustment and offer a wider range of gear-ratio options. The mounts will also allow the installation of any small-block engine if you want to make the switch at some point down the road.

The SS's 2-shoe clutch is attached to a pretty heavy cast flywheel. Its big, heavy-duty clutch bell is identical to that on the Savage, but it's supported by a pair of ball bearings (the MT2 had a plastic-caged needle bearing).

The exhaust is the same as the MT2 RTR's and consists of a bent-aluminum-tube header and a molded-plastic tuned pipe joined by a molded-silicone coupler. The header features a standard side-exhaust flange, so it will fit any standard side-exhaust engine.



The lower end of the front shocks are mounted directly to the C-hub of the front suspension.

LIKES

- 100cc fuel tank extends run time.
- Good support information in instructions.
- Radio tray is easily removed for maintenance.
- Durable drivetrain components.
- 2-year warranty on engine.

DISLIKES

- Servo saver binds when dirty.
- Tires are difficult to glue.
- Turnbuckle hex is an odd size.
- Plastic tuned pipe.
- Diffs are not sealed.
- Engine temp runs high.

THE COMPETITION

MT2 SS Academy RT4 GP Pro ➤ 10/04
CEN Fun Factor ST2 ➤ 11/02

Kyosho TR-15 Stadium Force 4WD ➤ 3/04 RC Nitro

OFIND IT

➤ Go to page 234 for manufacturers' contact information.

SUSPENSION AND STEERING. There haven't been any significant changes to the suspension and steering since the MT2 RTF but both of these newer trucks benefit from the upgraded suspension (since the original Nitro MT). The arms, shock towers and suspension mounts have been beefed up for durability, and there's a much more substantial bumper up front.

The 18SS has plastic, oil-filled shocks. Having been a fan of HF for years, I'm accustomed to aluminum shocks and other goodies being included with their vehicles, for example, the Racer and S versions. Aluminum shocks are more expensive on a truck because of their size, but it would be nice to have them on this latest one. (They were not included in the Racer version of the previous MT, either.)

Welcome upgrades in this area are turnbuckle linkages. The previous versions of the MT (with the exception of the MT Racer) had fixed-length molded linkage rods that obviously couldn't be adjusted. The MT2 18SS has turnbuckles with hex adjusters, and an included wrench allows all the critical linkages to be very quickly and precisely adjusted. My only dislike here is that the 3.7mm hex is an odd size. There aren't any metric wrenches of that size, and no corresponding standard wrench will fit. I'd prefer a 3, a 3.5, or a 4mm hex, so if I lose the included hex wrench a substitute would be easy to find. "Don't lose the wrench" is the message here!

BODY, WHEELS AND TIRES. An unpainted MT1 body, black Split 5 truck wheels and HPI Dirt Bonz tires and inserts are included. The instructions indicate a part number for chrome Split 5 wheels (3501), but the 18SS most definitely includes black wheels. Artist extraordinaire Josh Thiel sprayed on the Parma Faskolo paint, and that left only applying the decals and gluing the tires to the rims. An oversight in the tire or wheel configuration requires a little more time and effort to get tires glued to the wheels to complete the assembly. The tire groove on the rim is 3mm deep but the tire bead is only 2mm deep. There's a 1mm air gap between the flat part of the tire beads and the rims, so the tires don't seat flat against the rims, which only contact the beads' sides. You must use a strong glue on the tire beads' sides to create a solid bond, and you must be thorough.

The soft-compound tires deliver good traction, and the foam inserts support them well but are just soft enough to produce good traction. The 18SS includes aluminum hex hubs to attach the wheels to the CV axles, so you must use the HPI wheels. The hex hubs feature a "crush collar" that prevents the rims from being crushed or damaged if you overtighten the wheel nuts.

YOU'LL NEED

- 2-channel radio system
- Throttle servo
- Steering servo
- Tire glue
- Nitro fuel
- Glow igniter
- Receiver battery

WE USED

- Airtronics MX-3
- Airtronics 94357
- Airtronics 94358
- Team Losi Blue Tread Lock
- HPI Power Fuel w/20% nitro
- Sonic-Tronics Ni-Starter
- Team Orion Marathon
- 1400mAh NiMH



PERFORMANCE

I used HPI Power fuel with 20 percent nitro to test the MT2 18SS. The engine fires up pretty easily without any need to tweak the needles, but the weather was chilly during the first runs. Chances are, a leaner mixture setting may be needed for warmer weather, but the .18SS Outlaw engine ran very well for me out of the box.

The extra weight of the big flywheel and a little slippage of the standard, 2-shoe clutch means that

the power comes on a little too gradually to take full advantage of the 4WD. Reaching top speed took 9.5 seconds, which takes a lot of running room. The clutch shoes wear in after a few tanks of fuel, and then it engages a little better, but stronger clutch springs and maybe $\frac{1}{8}$ buggy aluminum clutch shoes would add snap to the throttle's bottom-end response. Don't get me wrong: the 18SS comes off the line well, but it would be much better with a lighter flywheel and a clutch that would let the engine rev higher before engaging. The weight of the flywheel is a tradeoff because it really helps to keep the engine running when many others might stall.

The 18SS's speed is quite fast for a stock stadium truck. Once the engine stretches its legs, despite the pedestrian low-end performance, it peaks at 43mph, which is well into the "looks as if it's doing 60" country. Reaching our peak speed of 43mph resulted in engine temps that climbed past the 350-degree mark. The ambient temp was only about 60 degrees Fahrenheit, so warmer weather will certainly push the engine temps higher.

Handling is good, but it could be better. When it comes to getting power to the ground, 4WD is the ultimate. I'm used to the delicate throttle management needed to coax a competition 2WD stadium



would help, too; the stocker is softly sprung and hangs up easily once dirt gets in the works. A heavy-duty Kimbrough servo-saver will only set you back about \$7. That's a small price to pay for more precise steering. The shocks are mounted in an unusual position: the bottoms of the front shocks are mounted on the C-hub at the very widest point. That lays the shocks down more than I like, and it makes the front suspension a little soft. The truck drives well over the small bumps, but if it gets a little too much air, the front end slaps the ground too easily. The bottoms of the rear shocks are mounted on the ends of the long hingepins that attach the rear hubs to the arms. The rear suspension feels a little more dialed, but I'd prefer a more conventional mounting position to increase suspension travel.

When it comes to big air, the 18SS has some traces of the Savage, so it doesn't mind it. The front shocks' damping is a little too light, so the Nitro MT2 may dig its nose into the dirt (depending on how you fly it), but midair attitude adjustments are easier with 4WD. The beefy front bumper helps to absorb some of the impact when things don't go as planned.

THE VERDICT

The MT2 18SS builds and runs very well, but it isn't without "misses." Among the items I'd like to see upgraded are the fiberglass brake disc, the heavy flywheel and 2-shoe clutch, the plastic tuned pipe and the absence of suspension-tuning options. This is admittedly more advanced stuff that may not be as important to some buyers, but the "SS" designation conditions some of us to think that these are the trademarks of an upscale kit.

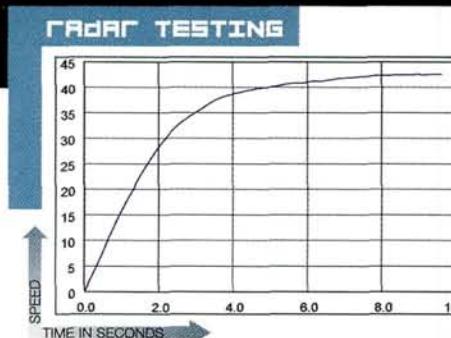
Most of the 18SS's upgrades are less visible and more functional. The beefed up drivetrain will pay off because it will withstand the power of the .18SS Outlaw engine. The Nitro MT2 has less bling but more beef, so you get to spend more time running than repairing. Yeah, I'd change some things, and the options are available for people who would go even more upscale, but I still give the Nitro MT2 18SS good marks overall for being a solid package that's easy to build and performs well. ■

RATINGS

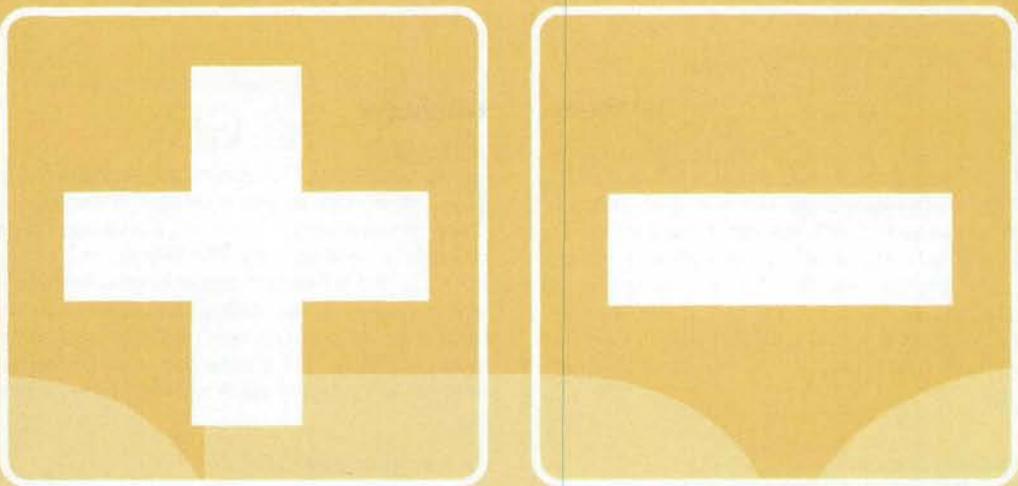
Instructions	●●●●●●●●●●	9.5	Great illustrations and detailed information on running, tuning and maintenance.
Parts fit & finish	●●●●●●●●●●	8	A clearance issue with the front shock tower takes it down a peg, but everything else fits well.
Turn in	●●●●●●●●●●	8	Four-wheel drive tends to make steering a little less responsive. A center diff would help.
Corner speed	●●●●●●●●●●	8	The Dirt Bonz tires help here. They provide pretty good traction and maintain good side bite.
On-power steering	●●●●●●●●●●	8	Bad on-power steering is inescapable with 4WD vehicles, and the 18SS isn't immune.
Braking	●●●●●●●●●●	8	The fiberglass brake disc starts out strong, but when heat builds up, it fades and wears more quickly.
Bump handling	●●●●●●●●●●	8.5	More shock-mounting options would allow the suspension to be set up for rougher conditions.
Jumping	●●●●●●●●●●	8.5	The truck flies well and takes hard landings in stride. The front suspension is a little soft.

Best buyer»» Novice to intermediate nitro off-road fans who prefer to build their own truck rather than go RTR.

truck around a track, so for me, it's awesome to be able to stab the throttle and stay in control, especially when exiting corners. When you get on the gas, the truck definitely wants to go straight, no matter how hard you turn the wheel, but that's a common characteristic of 4WD vehicles. The 4WD's ability to put power to the ground is a big plus. With a little suspension tuning, the performance could be even better. An aftermarket servo-saver



Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. > 12.0	3.7 SEC.	38.2 MPH
2 SEC. > 45.3		
3 SEC. > 92.7		
4 SEC. > 147.4		
5 SEC. > 205.4	9.5 SEC.	42.6 MPH



CHARGER GUIDE

» RC's Best Boxes

No facet of vehicle performance is unimportant in racing, but if you're an electric guy, some elements are certainly more important than others. Batteries are particularly key; you want the best you can afford, but getting raceworthy cells is only half the battle. Putting a good charge into those cells is just as important, and that's where the chargers featured here come into play. We've gathered all the popular "pro" chargers (which we define as any unit that saves and displays charge data and has adjustable charge amperage with a minimum peak output of 7 amps) so you can compare their specs and pick the best charger for your pit table.

BY THE RC CAR ACTION TEAM » PHOTOS BY PETE HALL

APS RACING**Dyno-Charge**

The APS Racing Dyno-Charge is the only charger in this group that not only charges batteries and breaks in motors, but can also dyno motors. For around \$160, you get a compact charger, aluminum motor stand, temperature probe, optical rpm sensor and motor rpm reflector. The case has a clean, modern layout with four membrane buttons to access all the features, and the blue backlit LCD screen is one of the nicest out there. Operating the Dyno-Charge is simple, and it didn't take us long to become adept with it.

QUICK SPECS

Charging capability	... 1 to 8 cells
Charge amperage 0.5 to 8
Discharger amperage None
Power supply DC only
Price \$160

PRO FEATURES

- » Programmable charging profiles.
- » Motor dyno displays current draw, rpm and run time.
- » Motor break-in with timer.
- » Compact case.
- » Adjustable voltage threshold.
- » Blue, backlit, 16x2 dot-matrix, numeric LCD.
- » Detachable temperature probe.
- » Machined-aluminum motor stand.

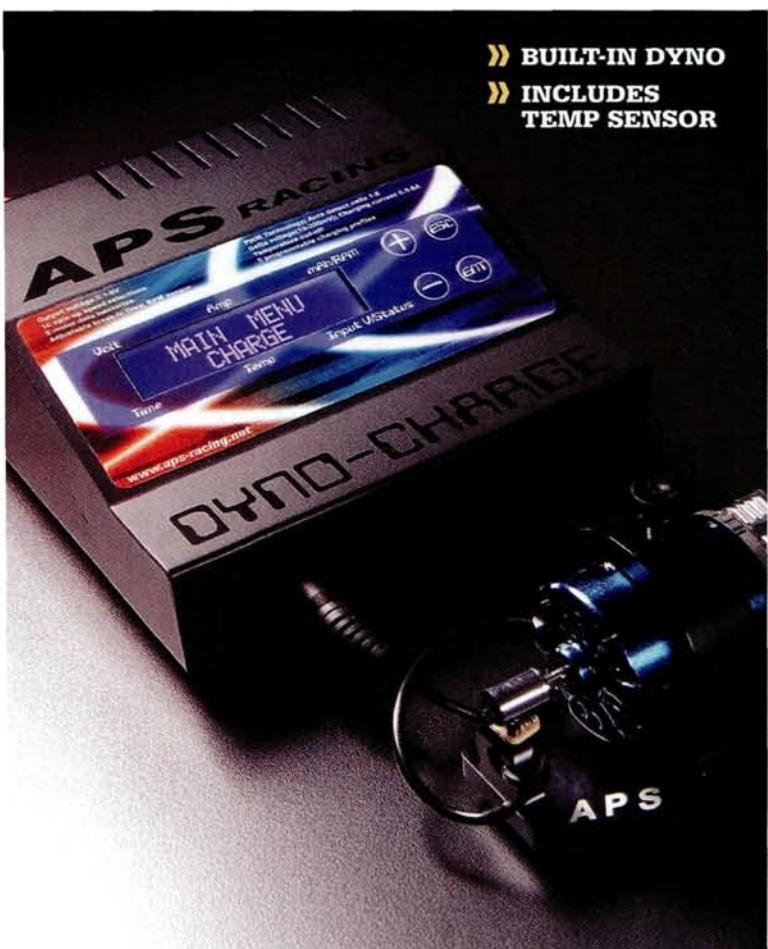
- » Easy to operate.
- » Measures and displays pack temperature.

BONUS

- » Only unit with a built-in motor dyno.
- » Stores 5 charge profiles and 5 dyno runs.
- » Compact case.

BOGUS

- » Menu doesn't "loop" to the beginning when you reach its end; you have to scroll backwards through all the items.
- » Membrane keypad requires a lot of finger pressure to activate.
- » No discharge capability.

**COMPETITION ELECTRONICS****Turbo 35 GFX**

Competition Electronics has established quite a few of the standards by which we test batteries, so it's no surprise that it's one of the most popular charger lines among electric competition enthusiasts. The GFX is the latest top-of-the-line charger from CE, and it has one of the longest feature lists of all the chargers in this guide. It's also one of the biggest, carrying over the large but familiar housing of previous chargers; and it's one of the most costly in this guide, but it's a price that many racers have shown a willingness to pay for such a well-featured machine.

QUICK SPECS

Charging capability	... 1 to 8 cells
Charge amperage 0.1 to 12
Discharger amperage 0.5 to 35
Power supply DC only
Price \$495

PRO FEATURES

- » 35A discharger matches current draw of today's mod motors.
- » Saves up to 10 charge profiles.
- » Specially designed to charge dead-shorted packs.
- » 20A motor-run feature can handle any mod motor (as long as your power supply is up to the task).
- » Navigation and data input via one rotary dial/input key.
- » Reads voltage down to 1 millivolt for more accurate cell matching.
- » HyperTerminal PC interface works with CE TurboLabel label-printing software and data-collection program.

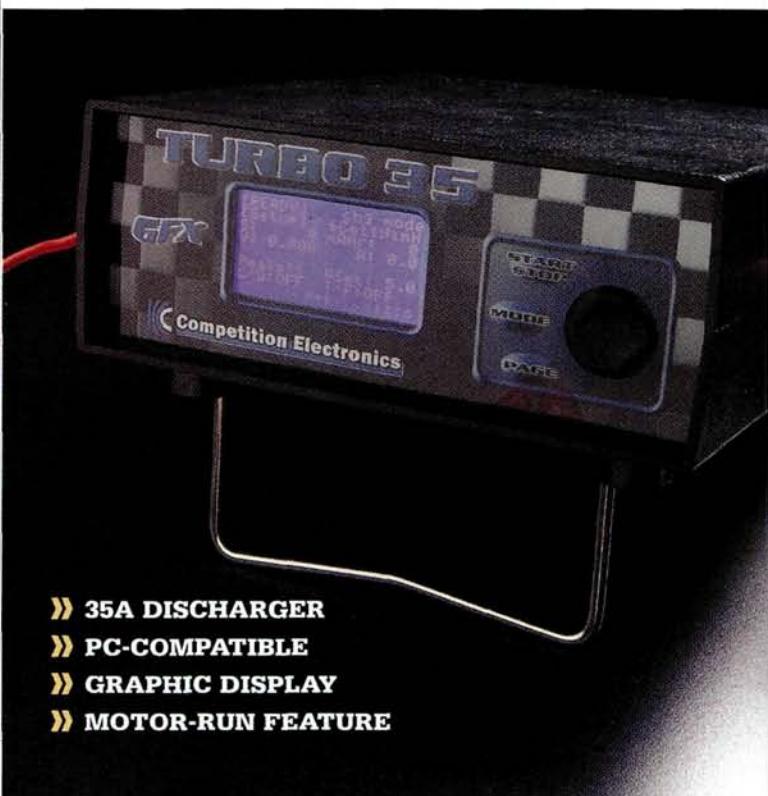
- » Linear and Turboflex (reverse pulse) charging modes.
- » Quiet, built-in cooling fan.
- » Backlit 8x18 LCD.

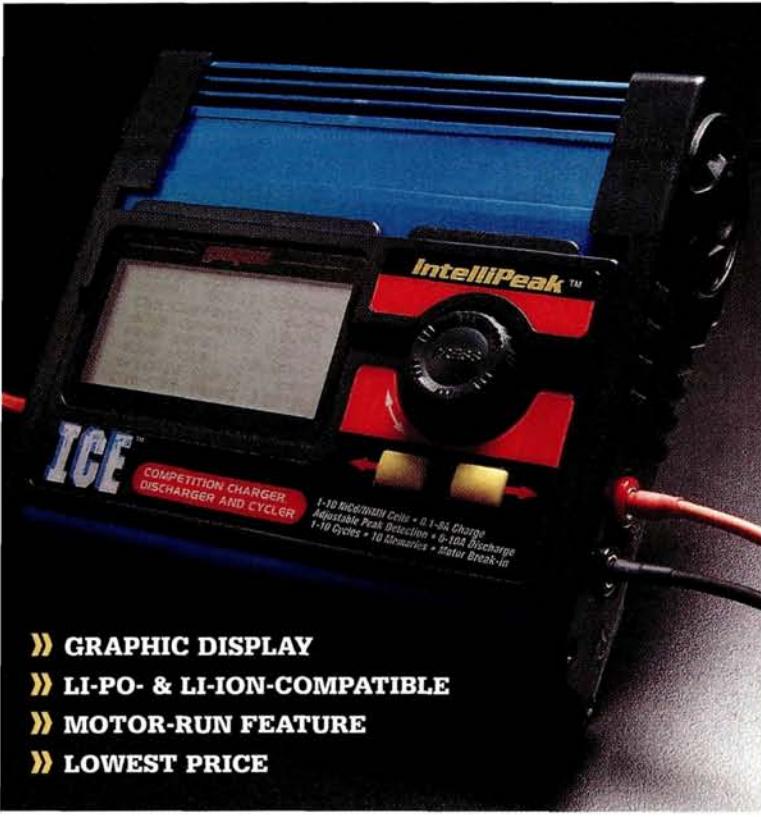
BONUS

- » Shows time that has elapsed since the charge was completed.
- » "Peak 2" recharging mode offers separate amperage rate and programmable time delay.
- » Optional battery holder available for matching single cells.

BOGUS

- » Scrolling information line is helpful but sloooooow.
- » Capacity-calculating software does not compensate for mid-charge amperage adjustments.
- » The on-screen graph mode doesn't provide a lot of information.





- » GRAPHIC DISPLAY
- » LI-PO- & LI-ION-COMPATIBLE
- » MOTOR-RUN FEATURE
- » LOWEST PRICE

DURATRAX

Intellipeak Ice

The Ice jumps out in this guide for three big reasons: its features, which are comparable with the most expensive chargers; its price, which is the lowest in the guide; and its compatibility with lithium-polymer (Li-po) and lithium-ion (Li-ion) cells (which are not yet a big part of the car scene, but they're coming). As for individual features, the Ice is loaded. Its large 8x21 dot-matrix screen displays charge and discharge curves; every type of battery performance parameter is charted; and you can even tell the Ice to leave you with a charged or a discharged pack when it has finished cycling the pack (up to 10 times, as programmed by you—like all the Ice's functions).

QUICK SPECS

Charging capability . . .	1 to 10 cells
Charge amperage . . .	0.1 to 8
Discharger amperage . . .	0.1 to 10
Power supply . . .	DC only
Price . . .	\$150

PRO FEATURES

- » Charges NiMH, Ni-Cd, Li-po and Li-ion cells.
- » Adjustable voltage threshold.
- » Linear, Reflex, Impulse and 4-step charging modes.
- » Delta-peak and optional thermal-cut-off charge termination.
- » Stores 10 charge profiles and data from 10 cycles.
- » Displays charge and discharge curves; includes "cursor" function to analyze any point on the curve.
- » 10A motor run.

- » Adjustable LCD contrast and sounds.
- » Internal cooling fans can be set for automatic or manual operation.
- » Extruded-aluminum heat-sink case.

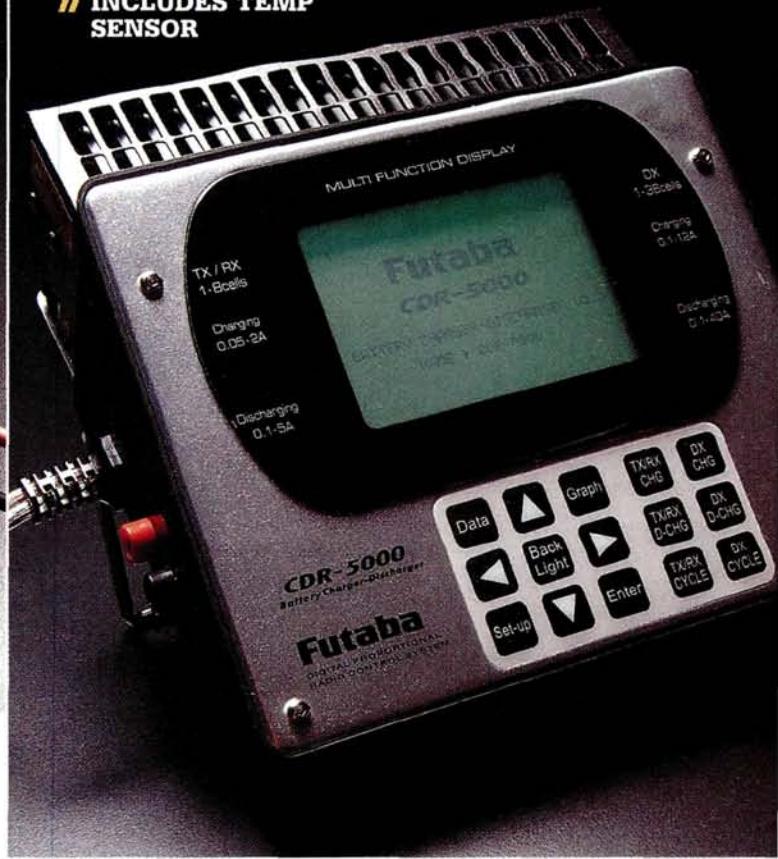
BONUS

- » Easy menu navigation and selection via jog dial.
- » "Peak delay" feature lets you use low-voltage threshold settings without false peaking.
- » "Repeak" feature automatically repeaks the pack up to three times with a cool-off time between peaks.

BOGUS

- » 10A discharge rate is too low to duplicate racing motor-amp draw.
- » LCD display is not backlit.
- » Temperature probe is not included, but costs only about \$10.

- » 40A DISCHARGER
- » GRAPHIC DISPLAY
- » INCLUDES TEMP SENSOR



FUTABA CDR-5000

The CDR-5000 pushes the envelope of the range and number of cells it can charge, and it provides tons of information about how they charge and discharge. It can store up to 10 charge-discharge profiles, allowing easy global changes to the preprogrammed charge/discharge parameters with the push of a couple of buttons. Screen after screen of battery data is at your disposal if you choose, or you can just hit the charge button and wait for the beep; it's as simple or as complex as you want it to be. But as with all things high-performance, ya gotta pay if you wanna play, and the CDR-5000 is the most expensive charger in this guide.

QUICK SPECS

Charging capability . . .	1 to 36 cells
Charge amperage . . .	0.1 to 12
Discharger amperage . . .	0.1 to 40
Power supply . . .	DC only

PRO FEATURES

- » Charges transmitter/receiver and sub-C cells at the same time.
- » 40A maximum discharge rate.
- » Can provide individual cell data for assembled pack.
- » Backlit screen is easy to see in poor lighting.
- » Provides comprehensive battery-performance data.
- » Fans keep the CDR-5000 cool even at high discharge rates.

- » Charge and discharge amperage can be changed mid-charge/discharge.
- » Includes adapters for transmitter and receiver packs.
- » Includes folding stand.

BONUS

- » Tells you how well cells are matched.
- » It even measures ambient temperature and humidity—great for nitro racing.
- » Variable-speed cooling fans.

BOGUS

- » Thermal probe can't be disconnected.
- » No motor-run feature.
- » Navigation isn't intuitive.

**INTEGY****Indi 16X9v6**

Integy offers an incredibly extensive line of chargers, and its top feature-loaded charger is the 16X9v6. This AC/DC charger is designed to properly charge both Ni-Cd and NiMH packs and even features four charge modes: first is delta-peak for normal battery charging; second is "fuzzy logic" that, according to Integy, is excellent for charging partially charged packs; third is a partial charge mode that will charge a pack from 10 to 50 percent of its full capacity; last is a boosting mode for racing that slightly discharges the pack and then blasts it with a preprogrammed fast charge.

QUICK SPECS

Charging capability . . .	1 to 10 cells
Charge rate	0.1 to 7 amps
Discharger	0.1 to 20 amps
Power supply	AC/DC
Price	\$265

PRO FEATURES

- » Backlit display.
- » Six ring tones.
- » Alligator clips with voltage sensors.
- » Four charge modes.
- » Built-in power supply.
- » Removable power cords.
- » Easy-to-navigate menus.

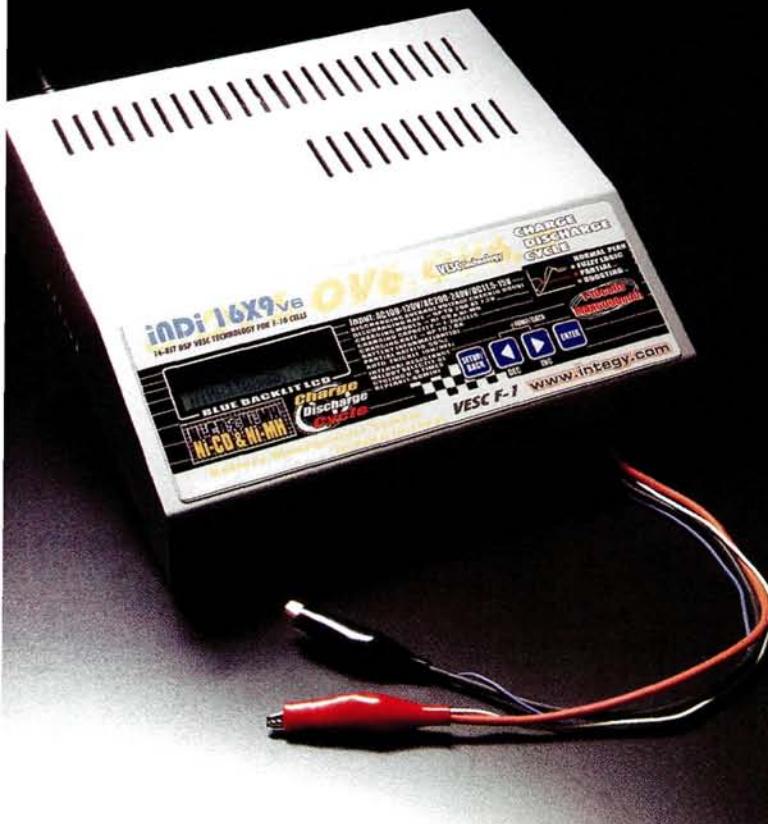
- » Matching feature.
- » Measures internal resistance.
- » Auto repeat.

BONUS

- » Discharges up to 20 amps.
- » Four charging modes that are truly tailored to NiMH packs.
- » Internal cooling fans aren't as loud as those in some of Integy's older chargers ...

BOGUS

- » ... but, the fans are still loud.
- » Case is a little large, even for an AC/DC charger.

» 20A DISCHARGER**LRP****Pulsar Competition 2**

The Pulsar Competition 2 does everything its predecessor did, only better. The maximum charge rate is now a full 10 amps; the voltage-threshold setting can be set up to 95mV for stubborn packs; the motor-run feature can handle up to 14 amps; and the discharge rate is now adjustable from 0.1 to 10 amps (the original Pulsar was fixed at the full 10). The Competition 2 also has LRP's latest PCS-3 software, which is even more resistant to false peaking than the original code. Factor in the Pulsar series' proven reliability and world-championship cred (Billy Easton used one to juice up for his 2WD IFMAR Off Road win), and it's easy to believe in LRP's "blue is better" hype.

QUICK SPECS

Charging capability . . .	1 to 8 cells
Charge rate	0.1 to 10 amps
Discharger amperage . . .	0.1 to 10
Power supply	DC only
Price	\$195

PRO FEATURES

- » Backlit display.
- » Charge amperage can be adjusted mid-charge.
- » Compact size.
- » Auto-restart feature.
- » Alligator clips with built-in banana plugs.

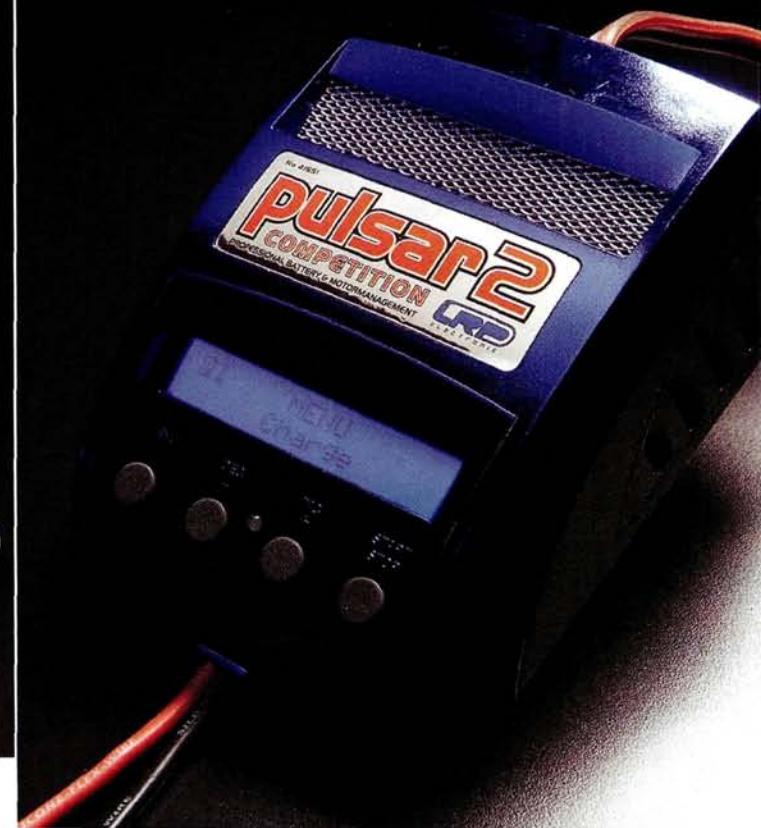
- » Charges at up to 10 amps.
- » Easy-to-navigate menus.
- » Average voltage displayed on discharge.
- » 14A motor break-in feature.

BONUS

- » 10A charge rate is high enough for all types of racing.
- » Automatically restarts if a charge is interrupted by a power loss.
- » Easy-to-understand display screen.

BOGUS

- » Only discharges up to 10 amps.

» MOTOR-RUN FEATURE

Where's Novak?

DON'T WORRY, ORANGE FANS: the Novak engineers are busy working on a replacement for the Millennium Pro as you read this. We don't have specs or a name yet, but Novak promises that an all-new, pro-caliber charger will be available by late summer. You'll see it first in *RC Car Action!*

Notes on BURPING

Unavoidable after downing a Big Gulp. Not good on a date. When hanging with the guys, you should be able to belch the entire alphabet, including the "Now I know my ABCs" bit at the end.

Now, about "burping" your batteries

The Tekin BC112A/C, DuraTrax Intellipeak Ice and Competition Electronics Turbo 35 GFX all have "burp" or "flex" modes that momentarily discharge the pack (we're talking milliseconds here) during the charge cycle (Tekin calls it Power-Flex, DuraTrax calls it "reflex," and Competition electronics calls it Turbo Flex). To quote DuraTrax: "Reflex charging is believed by some to help remove oxidizing gas bubbles from the battery's cell plates, allowing the battery to charge more efficiently, and it's thought to be especially helpful for older Ni-Cd batteries." Well said, and we like the wariness. The process does seem to wake up some Ni-Cds, but what about nickel-metal cells? Battery manufacturers don't recommend anything other than straight linear charging, and they warn specifically against pulse charging, wherein the charge is not delivered continuously but in on/off pulses—much like flex charging, but "off" becomes discharge. Our advice is to stick with linear charging, at least until your pack feels as if it isn't good enough for racing anymore. Then go ahead and experiment.

Why Buy a POWER SUPPLY?

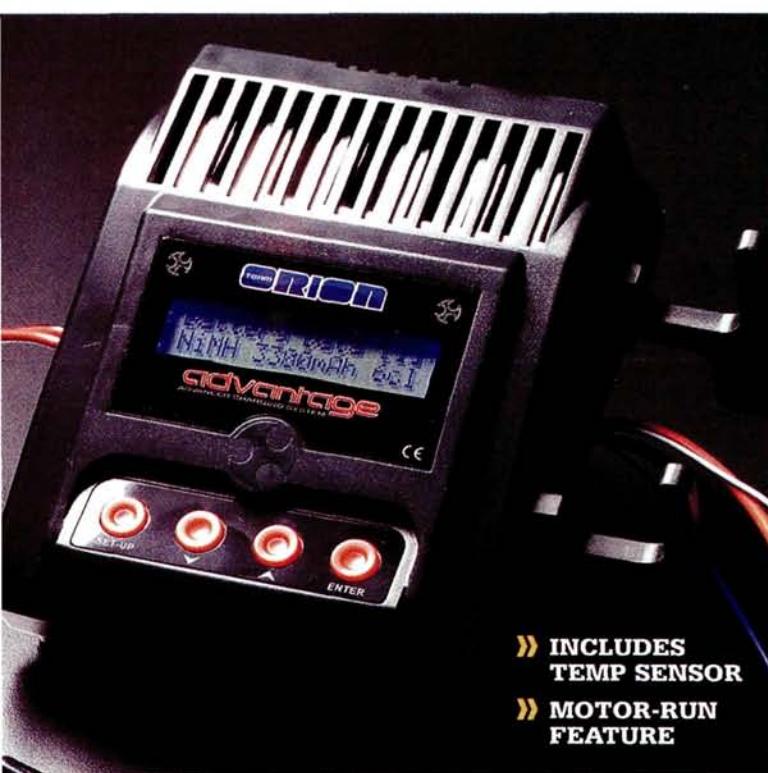
For convenience, AC/DC chargers are the way to go. But if you plan to get heavily into racing, the DC option has some advantages. The biggest is "clean power." No matter how good your charger is, it won't work at its best if you feed it "dirty" voltage with spikes and interference. The quality of AC/DC charger built-in transformers varies, so many racers prefer to use a high-quality external power supply that's specifically designed to convert AC power to clean DC power. For the absolutely cleanest DC power, an automotive 12V battery is the best choice, but who wants to lug that around?

There's also the convenience/utility angle; if you have a motor lathe, a computerized discharger, or other gear that requires DC power, you might as well trim some weight off your pit bag and get a DC charger, since you'll need to carry a power supply for your other gear. Here are some popular power supply options.

	Volts	Amps	Price*
Astro Flight	13.8	12.5	\$90
Competition Electronics	13.8	23	\$130
DuraTrax Compact	12	7	\$55
Dynamite Dual Output	12	11	\$135
Hobbico	12/5	11.5/3	\$105**
Integy SHE 10	12	10	\$80
Integy SHE 14A	12	14	\$145
Novak N-Power	14	10	\$95
Novak Black Box	12	4.5	\$50
Rivergate Bulldog 15	13.4	15	\$145
Rivergate Bulldog 30	13.4	30	\$185

*Varies with dealer **Has separate taps for 12V/11.5A and 5V/3A use





- » INCLUDES TEMP SENSOR
- » MOTOR-RUN FEATURE

TEAM ORION

Advantage Charging System

This is the newest charger in our guide. It's loaded with all the features racers need, but it's easy enough for almost anyone to use it. It allows you to adjust many of the charging parameters to suit your needs, including the step charging function, delta-peak, capacity and temperature cutoff. The step-charging mode allows you to program it to vary the charging parameters while it's charging. Along with the typical charging and discharging capabilities the Advantage can also cycle batteries, run in motors and count laps with its built-in clock, and it comes with a detachable temperature probe and a charging tray.

QUICK SPECS

Charging capability	1 to 8
Charge amperage	0.1 to 10
Discharger amperage.....	1 or 10
Power supply.....	DC only
Price.....	\$220

PRO FEATURES

- » Unique step-charging mode.
- » Cycles up to 3 times.
- » Adjustable delta-peak, capacity and temperature cutoff.
- » Four programmable charge modes: normal, flex, step and timer.
- » Customizable user name and language.
- » Clock with stopwatch and lap-counting mode.
- » Blue, backlit, 16x2 dot-matrix numeric LCD.

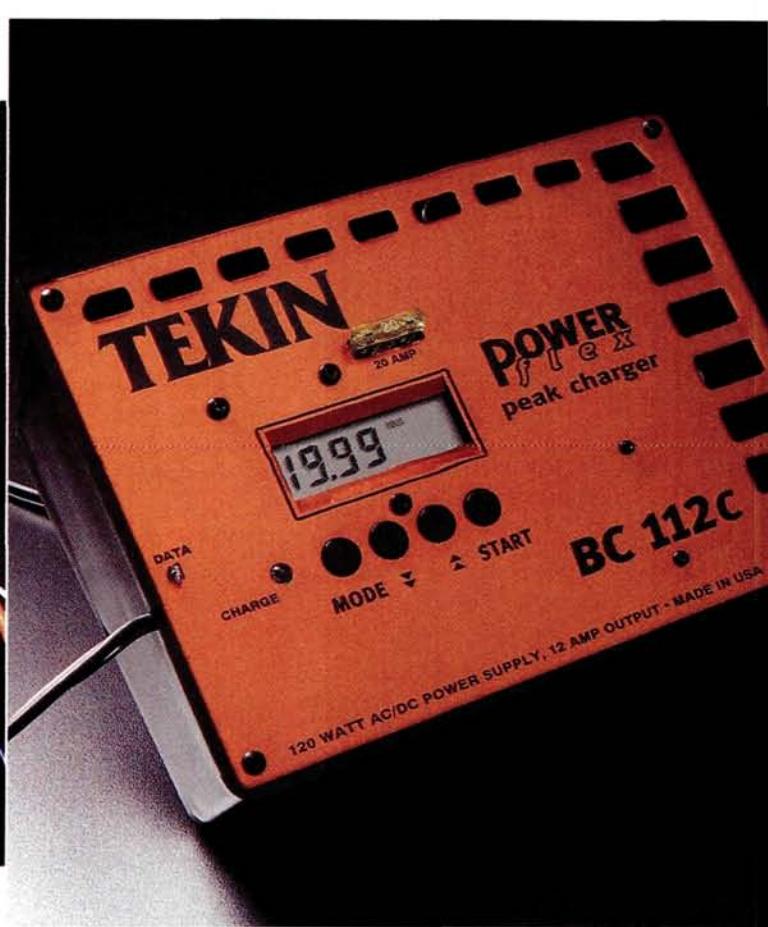
- » Battery charging tray.
- » Detachable magnetic temperature probe.
- » Can be used for motor run-in and can power a comm lathe.

BONUS

- » Five customizable charging memories.
- » Detachable magnetic temperature probe.
- » Built-in clock with stopwatch and lap counter.

BOGUS

- » Menu navigation is clunky.
- » Buzzers are quite loud (but can be turned off).
- » Maximum discharge rate is only 10 amps.



TEKIN

BC 112A/C

Tekin's charger is the old-timer of the group, but the stalwart, orange-anodized box has new code that makes it fully compatible with today's NiMH packs. Nothing fancy here; the display is a simple 8-segment LCD, and four buttons let you select and adjust the charge rate and charge mode and set the timer (if you opt for the timed-charge function). Power-Flex "burp charging" returns, as does the popular false-peak-busting "cold start" mode. If you already have a power supply, you can get the tiny, DC-only BC112A, and plug-in-the-wall types can get the "C" model. Or get both; you can plug the BC 112A into the BC 112C and charge two packs simultaneously.

QUICK SPECS

Charging capability ..	1 to 12 cells
Charge rate	0.1 to 12 amps
Discharger amperage.....	None
Power supply ..	AC/DC (BC 112C), DC (BC 112A)
Prices ..	\$180 (AC/DC), \$130 (DC only)

PRO FEATURES

- » Updated with latest "H31" software for 3300+ NiMH compatibility.
- » Cold-start function is great for packs fresh off dead-short.
- » Power Flex charging can help revive tired Ni-Cd packs.
- » Power takeoff plug lets you operate another charger using the BC 112C's power supply.

- » 12-cell, 12A charging is ideal for drag racers and boat guys.

- » Fuse-protected.

- » Displays charge time, peak voltage and capacity.

- » Timed charge mode is useful for stubborn packs.

BONUS

- » Powerful built-in power supply (BC 112C).
- » Light and space-saving (BC 112A)
- » Simple and reliable.

BOGUS

- » Light on charge info—strictly the essentials.
- » Styling and simple display are dated.

FIND IT

» Go to page 234 for manufacturers' contact information.



» Specs

	APS	CompElec	DuraTrax	Futaba	Integy	LRP	Orion	Tekin
AC/DC	DC	DC	DC	DC	AC/DC	DC	DC	AC/DC
Cells	1 to 8	1 to 8	1 to 10	1 to 36	10	8	1 to 8	1 to 12
Charge amperage	0.5 to 8	0.1 to 12	0.1 to 8	0.1 to 12	0.1 to 7	0.1 to 10	0.1 to 10	0.01 to 12
Discharge amperage	None	0.5 to 35	0.1 to 10	0.1 to 40	0.1 to 20	0.1 to 10	1 or 10	-
On-the-fly amp adjust	No	Yes	No?	Yes	No	Yes	No	No
Linear charge	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pulse charge	No	Yes	Yes	No	No	Yes	Yes	No
Cycles	-	9	10	99	9	1	3	-
Charge profiles	5	10	10	10	10	3	5	-
LCD type	Backlit 16x2	Backlit	8x21	Backlit high-res	Backlit 16x2	Backlit 16x2	Backlit 16x2	8-segment
Graphic display	No	Yes	Yes	Yes	No	No	No	No
Delta-peak mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Temp-peak mode	Yes	Yes	Yes	Yes	No	No	Yes	No
Adjustable V threshold	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
PC interface	No	Yes	No	No	No	No	No	No
Motor run-in mode	Yes	Yes	Yes	No	No	Yes	Yes	No
Delay-start mode	No	Yes	Yes	No	No	Yes	Yes	No
Input voltage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Output voltage	No	Yes	Yes	Yes	No	No	Yes	No
Peak voltage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Avg. voltage	No	Yes	Yes	Yes	No	No	Yes	No
Charge time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Internal resistance	No	Yes	Yes	Yes	Yes	No	Yes	No
Temperature	Yes	Yes	Yes	Yes	No	No	Yes	No
Price*	\$160	\$495	\$150	\$520	\$265	\$195	\$220	\$180/\$130

*Varies with dealer

» Specs Defined

AC/DC: an AC/DC charger can be plugged into the wall or run off a DC power source. DC-only chargers require an external DC power supply.

Cells: this number refers to the total number of cells a unit can charge at one time.

Charge amperage: the number of amps the charger delivers to the battery.

Discharge amperage: the number of amps the unit draws to discharge the battery.

On-the-fly amp adjust: most chargers allow you to adjust the amp rate before you start the charge. Once charging begins, the amp rate is fixed. On-the-fly adjustability lets you change the amp rate while charging.

Linear charge: this charge mode delivers power to the pack continuously, instead of in pulses or with variations in voltage.

Pulse charge: this charge mode delivers power in on/off pulses. Once fashionable for Ni-Cd packs, it isn't used often. NiMH cells don't like it.

Cycles: one "cycle" means the charger completely charges and discharges the pack. Some chargers can be programmed to do this a number of times (referred to by the number in the chart).

Charge profiles: some chargers can store your settings so you don't have to re-input your preferences (or "profile") when you switch from one type of pack to another. The number refers to the number of storable profiles.

LCD display type: some displays are 8-segment "calculator style"; others are dot-matrix and labeled according to the number of characters and lines available. For example, a "16x2" display has two lines of up to 16 characters.

Graphic display: can show information as graphics (for example, plotting discharge voltage as a curve).

Delta-peak mode: as a pack charges, its voltage increases steadily until it peaks, and then it goes down. The delta-peak mode looks for this voltage change and stops charging when it detects it (delta is the Greek symbol for change).

Temp peak mode: some chargers use optional temperature probes to monitor a pack's temperature, and they can be set to stop charging when the pack reaches a certain temp. Temp probes are also often used as fail-safes; if the pack reaches a certain temp before the charger detects peak voltage, it stops charging before the pack overheats.

Adjustable voltage threshold: when charging in delta-peak mode, voltage fluctuations may fool the charger into thinking the pack has peaked before it is fully charged. Chargers with adjustable voltage threshold

allows you to set the voltage drop the charger "looks for" to reduce the chances of a "false peak."

PC interface: the capability to load charger data to your computer.

Motor run-in mode: allows the charger to be used to operate a motor for break-in or to power a lathe's slave motor.

Delay-start mode: chargers with this function can be user-set to delay charging for a specific time. If there's a chance you won't get back from lunch in time to peak your pack for the Main, you can set the charger to do it for you.

Charge info: notes whether the charger displays the following:

- » Input voltage: voltage going into the charger
- » Output voltage: voltage going into the battery
- » Peak voltage: maximum voltage after charging
- » Average voltage: average voltage during a charge
- » Charge time: total time required to charge the pack
- » Capacity: total millamps delivered to the battery based on charge amperage and charge time
- » Internal resistance: the electrical resistance of the pack in ohms. Less resistance means more energy goes to the car instead of being wasted as heat.
- » Temperature: pack temperature ■



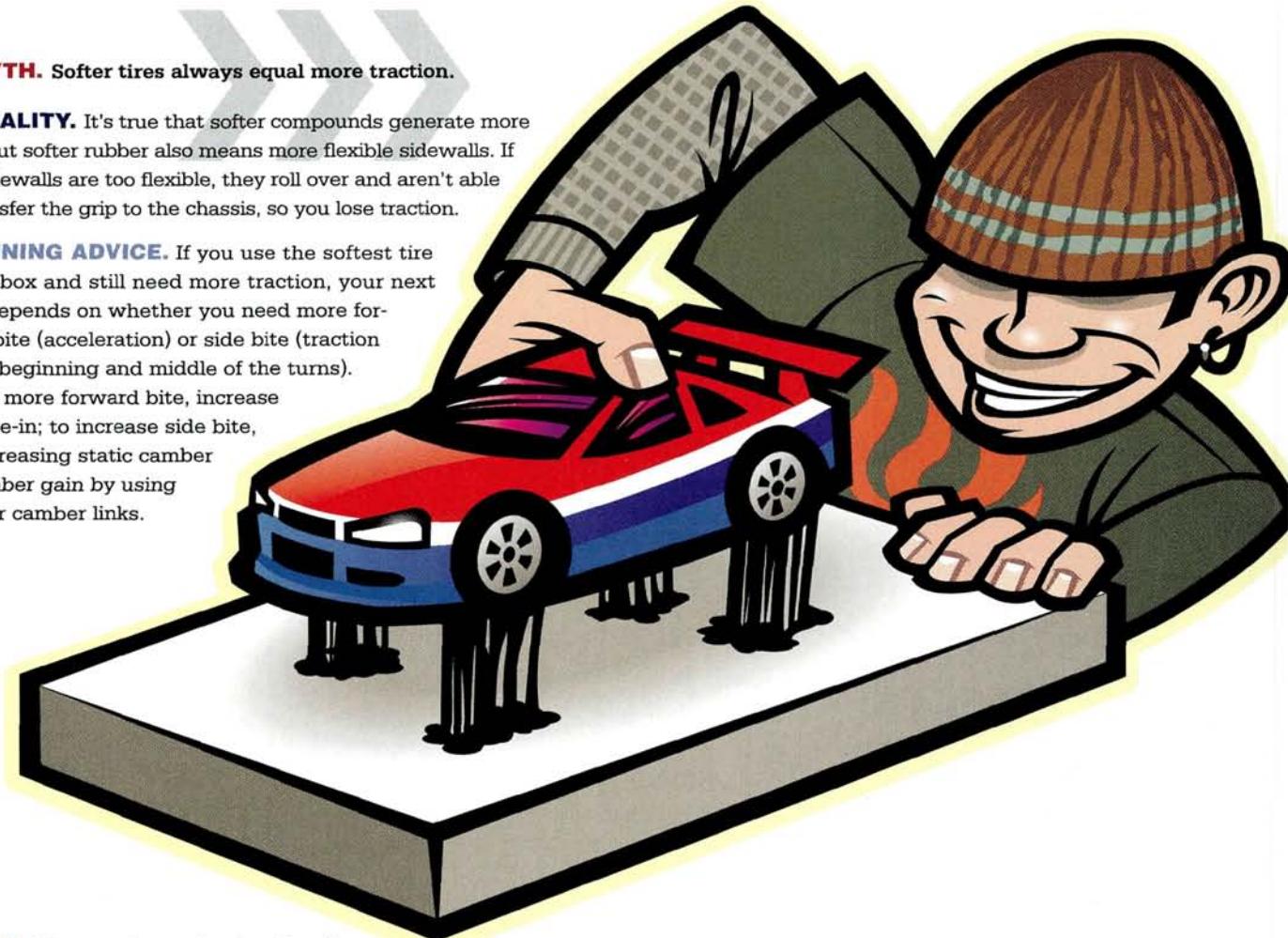
Tuning Myths versus the Fast Facts

RC CAR PERFORMANCE AND TUNING ADVICE comes in all forms of “theories applied” and “track tested” testimonials often adapted from the full-scale racing world. And while the idea of a tuning crossover is seductive, the truth is that RC cars rarely react in the way theories taken from larger scale motorsports predict. I don’t want bad advice to lower your lap times, so I’ve collected the top tuning myths I’ve heard during my 30 years of RC car racing. Time to get real.

»»» **MYTH.** Softer tires always equal more traction.

»»» **REALITY.** It’s true that softer compounds generate more grip, but softer rubber also means more flexible sidewalls. If the sidewalls are too flexible, they roll over and aren’t able to transfer the grip to the chassis, so you lose traction.

»»» **TUNING ADVICE.** If you use the softest tire in the box and still need more traction, your next step depends on whether you need more forward bite (acceleration) or side bite (traction in the beginning and middle of the turns). To get more forward bite, increase rear toe-in; to increase side bite, try increasing static camber or camber gain by using shorter camber links.



»»» **MYTH.** More spring preload makes the suspension stiffer.

»»» **REALITY.** By using more preload on the springs, you change only the ride height—not the spring rate. If you added enough preload to raise the vehicle to full ride height, increasing preload doesn’t affect spring rate.

»»» **TUNING ADVICE.** If your car bottoms out easily or has excessive body roll, preload is not the answer; you need stiffer springs.

»» MYTH. Long-wheelbase cars have less steering.

»» REALITY. The effect of a wheelbase change has more to do with weight distribution than with any stabilizing effect a longer wheelbase may have. For example, increasing a buggy's wheelbase by moving the rear hub carriers back on their hingepins may actually increase steering by taking weight off the rear tires.

»» TUNING ADVICE.

Instead of thinking "long" or "short" when making wheelbase adjustments, consider the positions of the axles relative to the car's heaviest components (engine, fuel tank and receiver pack in a nitro car; motor and battery for electrics). In the end, weight distribution is probably making the most difference.

»» MYTH. Shock springs in the same package are the same length.

»» REALITY. Shock springs are mass-produced and though every company does its best to QC each batch, even a 0.030 difference in length can throw off your car's balance.

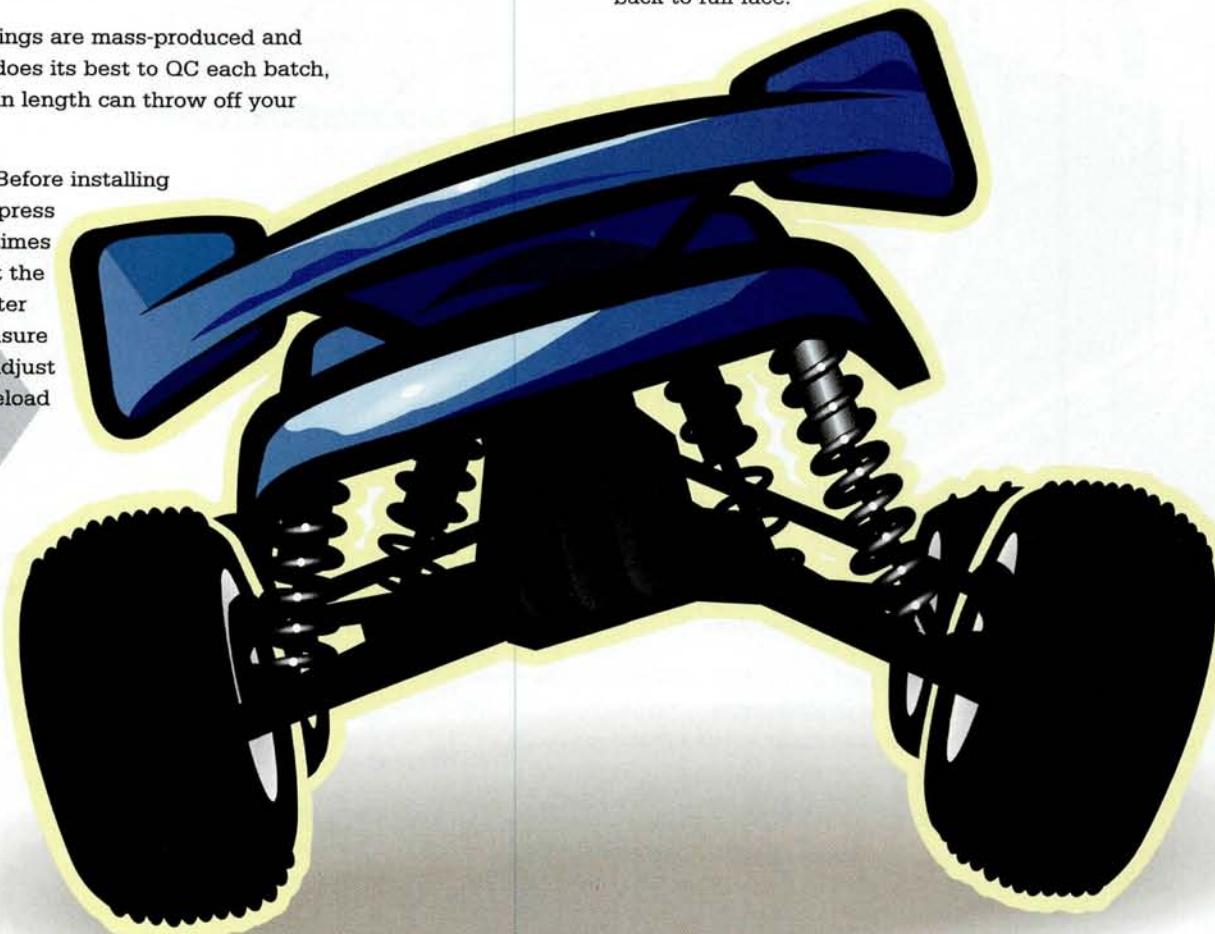
»» TUNING ADVICE. Before installing

new shock springs, compress them completely a few times to make sure they are at the length they would be after some use, and then measure them. If one is shorter, adjust the shock's threaded preload collar to compensate.

»» MYTH. Reducing motor timing increases torque.

»» REALITY. Using less timing can make a motor less efficient and cause it to run outside its power band. Every wind has a timing "sweet spot" that varies with the track.

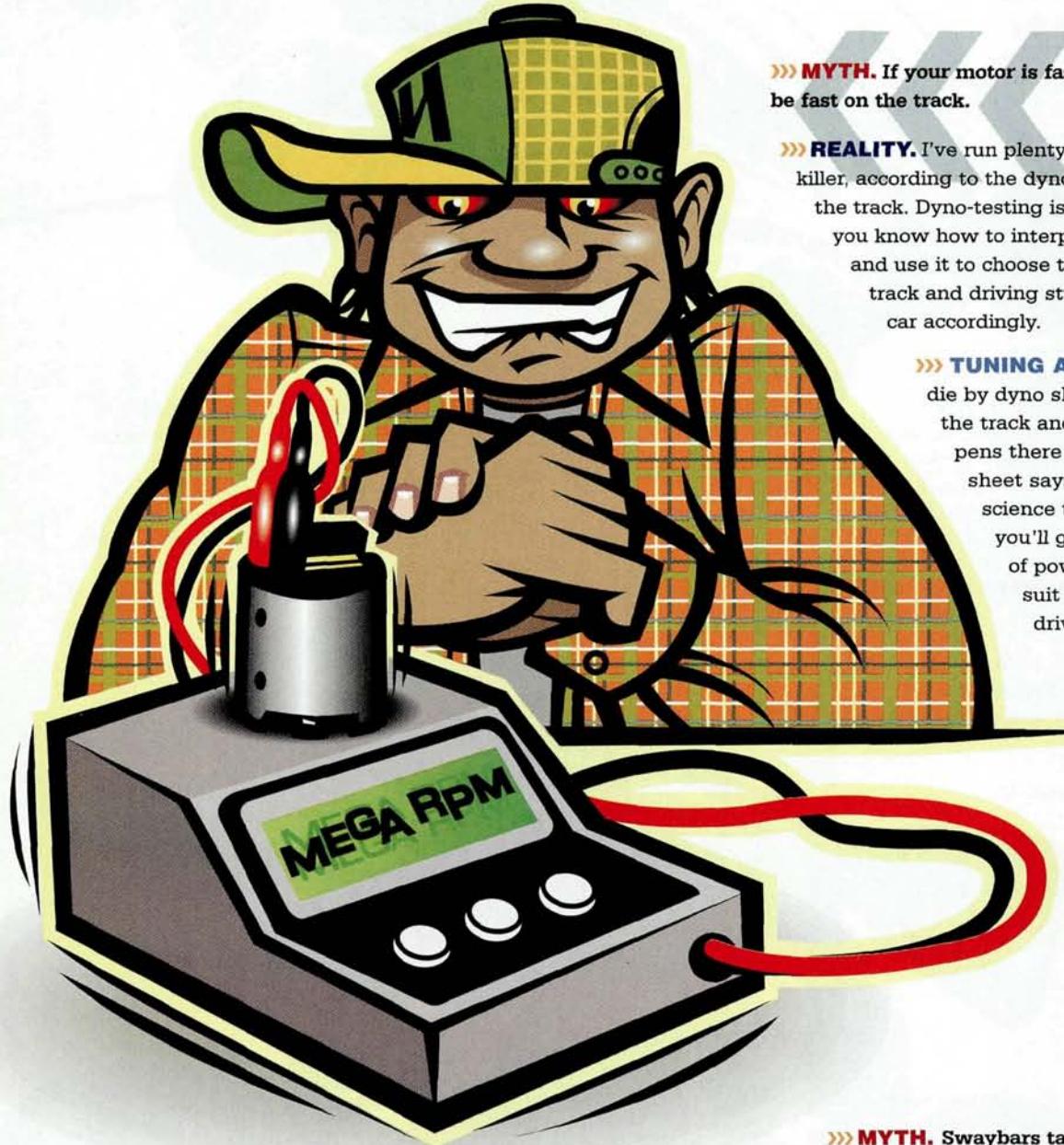
»» TUNING ADVICE. Instead of altering timing, try stiffer brush springs. The brushes are a factor, too; if you run cut-down brushes, switch back to full-face.



»» MYTH. The higher the peak voltage when a battery pack is charged, the more power it has.

»» REALITY. In general, higher peak voltage equals more internal resistance, which equals less power output.

»» TUNING ADVICE. Note your pack's peak voltage when it's new, and monitor it as the pack ages. If its peak voltage increases, monitor its performance on the track carefully, as it is starting to reach the end of its peak-performance period.



»» MYTH. Gearing down increases run time.

»» REALITY. If your car is overgeared, gearing down will increase run time; but when your car is geared properly for the track, further gearing down will only make the car slower and force you to use full throttle more often in the infield—and that decreases run time.

»» TUNING ADVICE. If you have trouble making run time but the gear ratio feels right (no one is walking you on the straightaway, and you don't constantly need full throttle), the problem is obviously with your battery and/or motor efficiency. Make sure your charger is working properly, the pack is still race-worthy and the motor brushes and commutator aren't excessively worn.

»» MYTH. If your motor is fast on the dyno, it will be fast on the track.

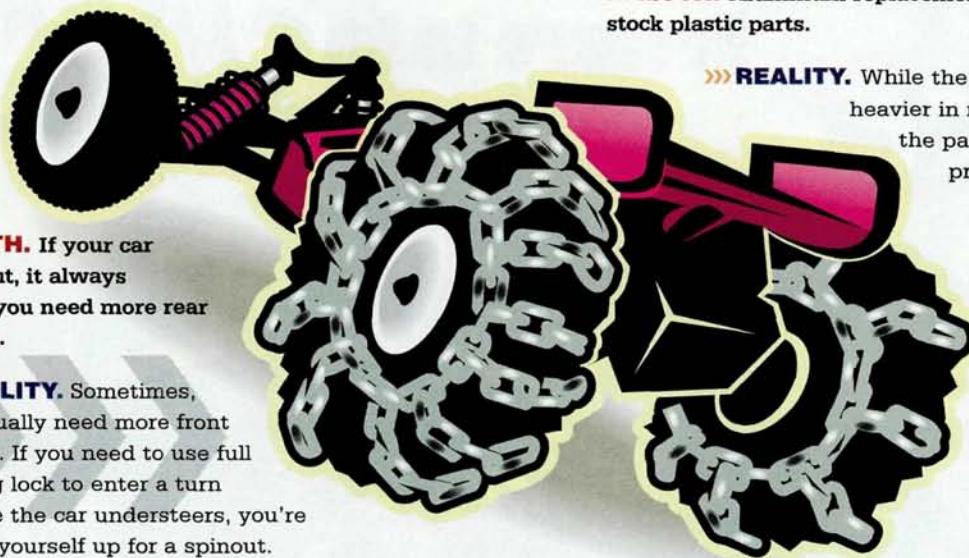
»» REALITY. I've run plenty of motors that were killer, according to the dyno, but ran like crap on the track. Dyno-testing is only an advantage if you know how to interpret the dyno data and use it to choose the best motor for your track and driving style and then gear the car accordingly.

»» TUNING ADVICE. Don't live and die by dyno sheets. Run the motor on the track and compare what happens there with what the dyno sheet says. This is not an easy science to master. In time, you'll get a feel for the types of power delivery that best suit your track, car and driving style.

»» MYTH. Swaybars take traction away from the end of the car they're mounted on.

»» REALITY. Usually, but not always. If your car's roll center is too low, adding a swaybar will actually have the opposite effect: you'll gain traction.

»» TUNING ADVICE. Typically, swaybars are used so you can increase side-roll resistance without affecting the spring rates on the wheels too much. Use swaybars when you don't want to make a full jump in spring rates. Be careful to set the tweak with the swaybar(s) unhooked, and then hook the swaybar(s) up to make sure they don't upset the car's weight balance.



»» MYTH. If your car spins out, it always means you need more rear traction.

»» REALITY. Sometimes, you actually need more front traction. If you need to use full steering lock to enter a turn because the car understeers, you're setting yourself up for a spinout.

Once the car slows enough for the front tires to grab, it will spin because the front tires are at full steering lock.

»» TUNING ADVICE. If you have this handling condition, consider trying softer front tires or softer front springs to increase traction, and dial out some steering throw. Strive for a balance between front and rear traction.

»» MYTH. Aluminum replacement parts are always better than stock plastic parts.

»» REALITY. While the bling factor is nice, aluminum is heavier in most instances and may overstress the part it's connected to; this may cause premature wear or failure.

»» TUNING ADVICE. If you find that a part constantly breaks, consider an aluminum replacement. But beware: the loads that caused the part to break will now be transferred to other parts that may be more difficult or expensive to replace.

To say that tuning and driving an RC car can be challenging is an understatement. A car's power-to-weight ratio and the force applied to the parts is incredible and warrants critical thinking before you apply theories from other automotive disciplines. I hope you had a few "ah-ha" moments while reading this column and that you'll think twice about tips you may have heard, but never tried and proved to yourself. Remember, take care of the *how* and the *how fast* will take care of itself. ■

MAGNETICS

IT'S TIME TO LAY SOME RUBBER BABY!



SUPER GRIP - 1166



HYPER GRIP - 1165

SUPER/HYPER GRIP TIRES

Magnetics Hyper Grip and Super Grip 26mm Radials are built using an interior honeycomb design, which means NO FOAM INSERTS required! The tires offer good grip and are made of a long-wearing medium compound rubber.



Honeycombed Interior

High Grip/Long Wear Rubber

PRE-MOUNTED TIRES →

You want Race Time, not Glue Time. Magnetics come on six serious 26mm street wheels with pre-mounted and glued radials. Finished in chip resistant high gloss chrome, Magnetics use the industry standard hex fitting for compatibility on the most popular electric and nitro touring cars. All styles are available in either "Hyper Grip" or "Super Grip" tread patterns.



NITROUS - 1040



SPEEDSTER - 1041



ZURG - 1043



PINZETTI - 1044



PYTHON - 1045



TWISTED TUNER - 1042

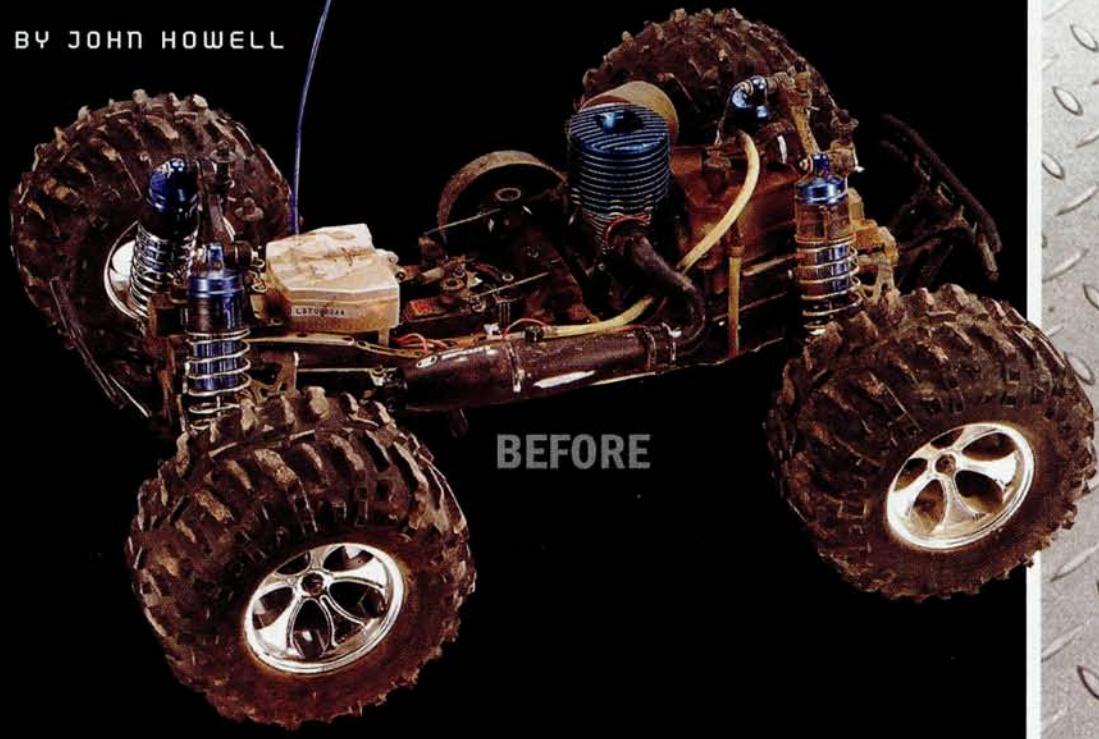


PROJECT: RACE LST

MONSTER MAKEOVER

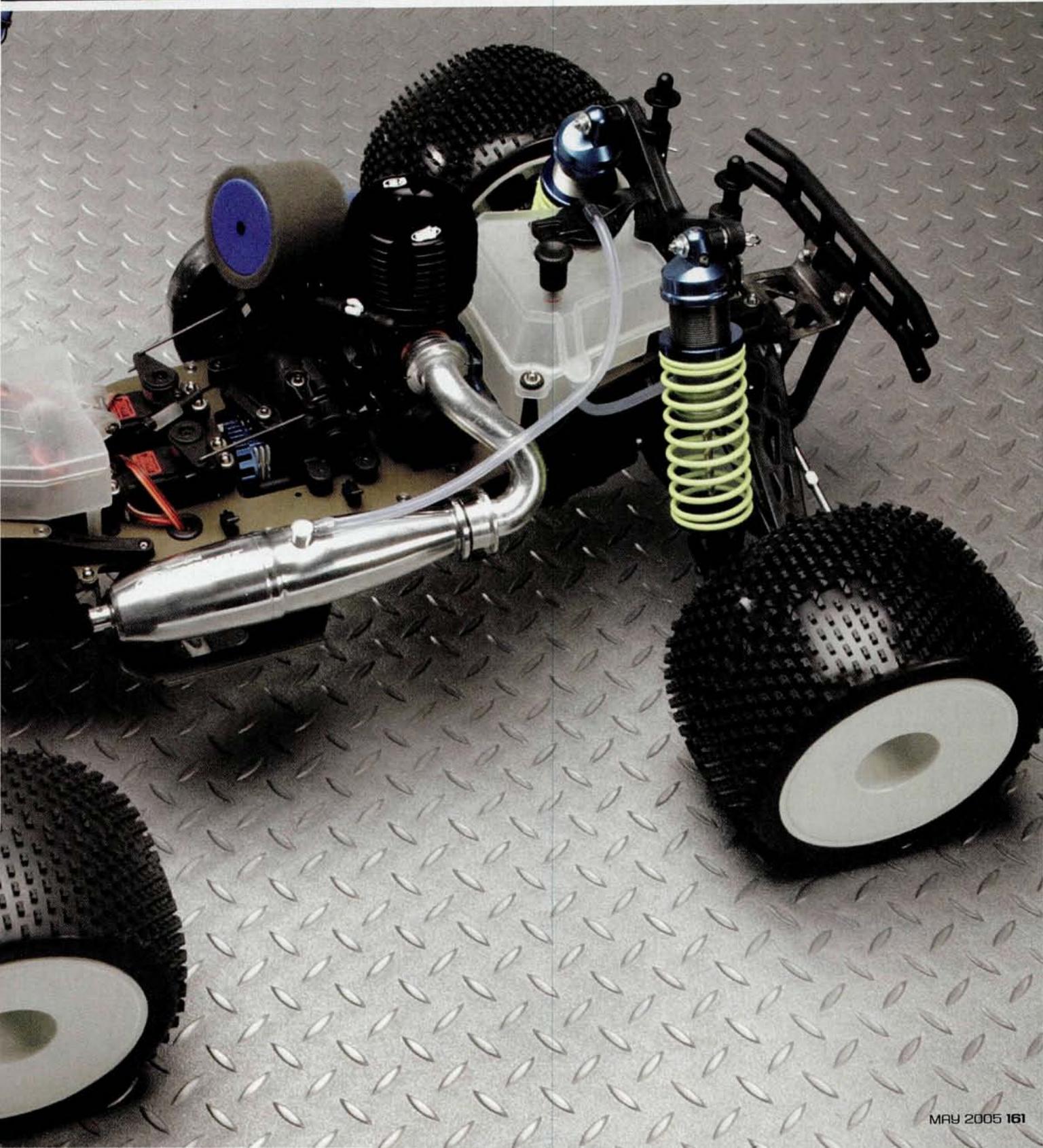
There's no question that the Team Losi LST is the perfect backyard basher. It's big and beefy, backs out of trouble with reverse, and its high/low transmission lets you instantly gear for rock crawling or maximum speed. But despite all its backyard-ability, it's still a Losi, so that means it's gonna get raced. Which brings me to my mission: turning the LST into a full-blown racer. Sure, I could glam it out with tons of aluminum bolt-ons, but my goal was to turn it into a stronger, lighter, faster and meaner monster. Here's what I did to complete the transformation from basher to racer.

BY JOHN HOWELL



BEFORE





PROJECT LST PARTS

» TEAM LOSI

- HD chassis plate—item no. LOSB2260
- HD FR bottom plate—LOSB2263
- HD R bottom plate—LOSB2264
- HD chassis top plate (2)—LOSB2262
- HD chassis skidplate—LOSB2261
- Polished-aluminum diff case (2)—LOSB3531
- High-performance brake-pad set—LOSB3606
- Hard-anodized pivot balls (2)—LOSB4021
- Ti-nitride inner hingepins (4)—LOSB4102
- Ti-nitride outer hingepins (4)—LOSB4103
- Ti-nitride 2-speed gear conversion—
LOSB3428
- Secondary gear cover—LOSB3191
- Threaded shock bodies—LOSB2814
- Ti-nitride shock shafts (4)—LOSB2841
- Shock cartridges (2)—LOSB2875
- 6.0 shock springs (black)—LOSB2951
- 7.4 shock springs (yellow) —LOSB2952
- Tuned pipe and header—LOSB5057

» HARDCORE RACING—TITANIUM

- Bulkhead plates (2)—HCR-15064
- Hingepin set (lower/upper)—
HCR-15084/HCR-15074
- Lower battery skidplate—HCR-15104
- Bumper brackets (2)—HCR-15114

» PEAK RACING

- Diablo .28 rear-exhaust engine—PEK6081
- Blitz 1400 receiver pack—PEK4038

» MIP

- CVD kits (2)—1590
- Center drive CVD—1591

» PRO-LINE RACING

- Crowd Pleazer 2.0 body—3186-00
- 40 Series Velocity wheels w/23mm hex hubs
(2)—2678-04
- 23mm HD hex hubs (2)—6034-00
- Bow Tie 40 Series (2 sets)—1113-00

» LUNSFORD RACING

- Titanium turnbuckles—2821
- Titanium screws (various sizes)

» TRINITY PRODUCTS

- Monster Factory shock oil—TRI50006

DURABILITY

The LST has proven to be one tough truck, but as with just about everything, certain things could be even tougher. Here are my major enhancement choices in order of importance; a score of 10 denotes a "must have" item:

TEAM LOSI POLISHED-ALUMINUM DIFF HOUSINGS

MUST-HAVE FACTOR »» 10

Although I've never had a problem with the stock diff cases, the word on the street is that they tend to split under the load of all the power the stock big-block pumps out. The aluminum diff cases are much more resilient, and most important, you'll usually find them for less than \$10 at your hobby store. When it comes to the best mod and the best bang for your buck, you just can't beat these aluminum housings.

One quick note: inside the stock diff, there's a shim between the drive cup and the diff that you'll have to move to the other side when you make the swap. If your gear mesh is too tight when it's in the new aluminum case, you can simply do away with the washer altogether (which is what I did), and it will work just fine.



Team Losi's polished-aluminum diff cases are crucial upgrades because they're considerably more durable than the stock plastic cases, and they cost less than \$10 apiece!

TEAM LOSI TITANIUM-NITRIDE 2-SPEED GEAR CONVERSION

MUST-HAVE FACTOR »» 7

If you run the truck on really loose, gritty dirt, the stock gears might be a little crunchy. The new titanium-nitride gear set is ridiculously sturdy. Anyone who has ever flat-spotted or otherwise blown out the stock gears can rest easy: you won't be replacing these gears anytime soon. One word: bulletproof.



The titanium-nitride gear set not only looks swanky, but it also happens to be bulletproof. You'll probably have to replace everything else on the truck before these gears wear out.

THE DRAKE SETUP

I hit up Losi's Adam Drake for his winning LST setup. Here's what he runs on his truck.

» FRONT

Shock oil: 30WT Losi

Pistons: stock

Shock position: outside on tower and arm

Swaybar: thin

Diff fluid: 50,000WT

» REAR

Shock oil: 30WT Losi

Pistons: stock

Shock position: outside on tower and arm

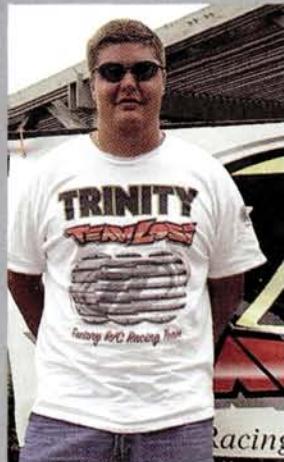
Swaybar: thin

Diff fluid: 50,000WT

Toe: 2 deg. of toe-in per side

Tires: Team Losi Zombie Maxx

Wheels: Stock LST



TEAM LOSI SECONDARY GEAR COVER

MUST-HAVE FACTOR »» 9

This sorta goes with my ti-nitride 2-speed gear conversion, but you should use this Lexan shield even if you don't grab the gear set. It does a great job of keeping out dirt and debris, and that helps to prolong gear life.

LUNSFORD TITANIUM TURNBUCKLES

MUST-HAVE FACTOR »» 8

They're huge, they're titanium, and they're significantly stronger than the stock steel rod. Enough said.



Lunsford Racing's titanium turnbuckles are massive! It would take some serious force to tweak these parts.

TEAM LOSI TITANIUM-NITRIDE HINGEPINS

MUST-HAVE FACTOR »» 7

Though they aren't exactly make-or-break items, they're a little stronger and noticeably smoother, and they'll last longer. If you have the money, go for it.

TEAM LOSI TITANIUM-NITRIDE SHOCK SHAFTS

MUST-HAVE FACTOR »» 7

At first, I thought that these belonged more in the performance category. These shock-shaft upgrades will last much longer than the stock units and they're less likely to suffer from pitting, so I guess that they should be included in this category.



TEAM LOSI HARD-ANODIZED CHASSIS PLATES & SKIDS

MUST-HAVE FACTOR: 6

The hard-anodized chassis plates and skids are more durable, but to be totally honest, what really sold me on them was their looks. They're anodized in a very cool gunmetal-gray/gold finish that looks unbelievably trick. Do they make the truck more durable? Yes. Do you have to get them to make the truck run at its peak? No ... but the hella-dope factor increases tenfold when you bolt them on.

» FIND IT

» Go to page 234 for manufacturers' contact information.

A set of Team Losi's hard-anodized-aluminum skidplates protects the underbelly of this beast. Check out the extended sections on the center skidplate that protect the pipe and gears—pretty trick!

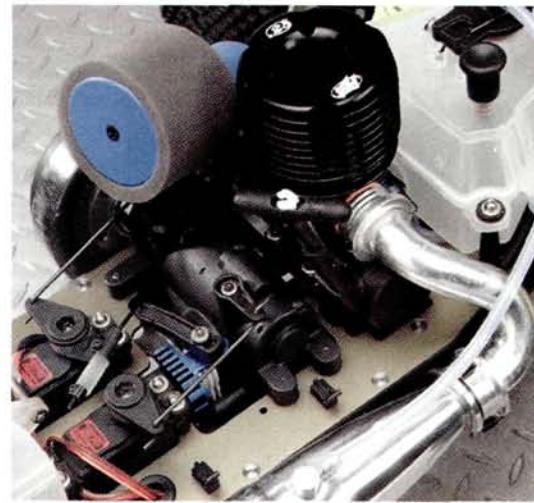
POWER

PEAK RACING DIABLO .28

The stock Dynamite engine is a screamer, but I was super-eager to try Peak Racing's new Diablo big-block. This rear port exhaust big-block has quite an impressive features list. Its race-spec porting features three transfer ports and one exhaust port. Inside, there's an ABC piston and sleeve and a turbo-design race-ported crank with a knife-edge double-bushing conrod. Among its other slick features are a skirted double-oil-groove piston, a two-piece, replaceable, button-style turbo head (a turbo glow plug is also included) and a high-performance 8mm aluminum slide carburetor. Peak Racing rates its horsepower output at 2.85 at 42,800rpm.

PEAK MOTORS MARATHON 1400 RECEIVER PACK

The four powerful servos that control the truck will drain a receiver pack pretty fast. I chose one of Peak's new high-capacity Marathon packs to add extra punch and get the job done.



Peak Racing's new Diablo .28 provides plenty of "oomph" and is matched to Team Losi's polished pipe.

PERFORMANCE



When it comes to hitting the track, you have to give Pro-Line's 40 Series low-profile Bow Ties the nod because they grip well on most track surfaces.

PRO-LINE BOW TIE 40 SERIES TIRES

MUST-HAVE FACTOR »» 9

Everyone will tell you that when it comes to a race setup, nothing is more important than tires. With that in mind, I top this category with just that mod. I picked out a set of Pro-Line's Bow Tie 40 Series low-profile tires and matched them with a set of the company's Velocity dish wheels with the 23mm HD hex setup. The tires might actually be a little too low when used with the truck's stock gearing (which I kept), and I could lose a little top speed. There will definitely be a tradeoff when it comes to acceleration versus top speed.



For the ultimate in adjustability, I bolted on a set of Team Losi's threaded, hard-anodized shocks.

When I get to the track, we'll see whether I made the right choice.

TEAM LOSI THREADED SHOCK BODIES

MUST-HAVE FACTOR »» 9

If you plan to race, these should be at the top of your list. Not only are they more convenient to use, but they also work better. They're hard-anodized for strength, and they're supersmooth. They're also way more convenient.

TEAM LOSI HIGH PERFORMANCE BRAKE-PAD SET

MUST-HAVE FACTOR »» 7

We all know that this truck stops on a dime, but I've been told that these new fiberglass brake pads offer consistently better braking than the stock steel pads.

STYLE POINTS

Sure, I said I wouldn't turn this into an all-out trophy truck, but I had to add a little swag to personalize it. These are the items that I really just had to have!



The finishing touch: a Pro-Line Crowd Pleazer 2.0 painted by Zegers R/C Graffixx.

HARDCORE RACING TITANIUM TREATMENT

These guys make a ton of cool LST hop-ups. I opted for a few select mods (for strength) but not for the whole package. I added ti hingepin and bulkhead braces, a receiver-pack cover and the bumper-bracket kit. The overall quality is awesome; the stuff looks hand-crafted!

TEAM LOSI POLISHED PIPE AND HEADER SET

I added this strictly for looks. The only difference between this pipe and the stocker is that it's polished.

LUNSFORD TITANIUM SCREWS

These add the ultimate in swag technology. As we all know, ti screws weigh considerably less than the stock steel pieces, and they're also much stronger. But honestly, it's all about style here.

PRO-LINE CROWD PLEAZER 2.0 BODY

I loved the look and lines of this body the minute I saw it—no facts; no figures; just my preference. Bill Zegers of Zegers R/C Graffixx did an awesome job of laying down the paint for me.

PROJECT LOSI LST in the dirt

After breaking in the Peak Racing engine, I took the truck out to Sun Valley Raceway (Sun Valley, CA) for its first drive. First I must tell you how powerful the Peak Racing engine is. It borders on being too powerful, actually: bury the trigger off the line on a high-bite surface and the truck flips over! Overkill for sure, but I found that on the track, the engine produces good usable power. As the truck ripped down the straightaway, I was surprised to see that I didn't lose any top end with the smaller-diameter tires. The Peak engine puts the power to the ground nicely. It offers crazy-fast acceleration and has strong midrange punch. When you need to ramp up your speed before a tabletop or a triple section, the engine has gobs of power. Just blip the throttle to preload before the jump, and the engine quickly spools up.

After a few laps of getting-used-to-it time, I decided that the LST was sitting a little too tall and had too much body roll. I brought it in to drop the spring preload (gotta love those threaded shock bodies), and after dropping the truck so the arms were level, I headed back out to the track.

The LST felt more composed and handled higher cornering loads, but its lower stance caused a new problem: the rear inside tire gradually lifted when cornering, so another quick trip to the pits was in order. I bolted on Team Losi's optional rear swaybar to calm the truck down a bit on the high-bite surface, and after this mod, handling was exceptional. The truck's wide stance and super-cush shocks allow it to handle well on really rough tracks. The Sun Valley track has some pretty bumpy sections and areas that get torn up quickly. The LST handled the bumps and rough stuff like a champ! It also had tons of steering; there's no need to swap out the stock

steering servos. It turns in hard (bordering on oversteer) and exits turns equally well. The Pro-Line 40 Series Bow Ties were the right choice; they get exceptional grip on loamy-to-high-bite surfaces such as Sun Valley's, and the low-profile sidewall really cuts down on carcass roll.

Not surprisingly, the LST easily handles jumps. Even though it's big and somewhat heavy compared with other monsters, its oversize shocks do a great job when it's time to smooth out big-air landings. It jumps very neutrally but has a slight nose-up attitude. This is easily altered with a quick stab at the brakes. The truck is very receptive to brake input, but it isn't over-responsive. Sometimes, when you get on the binders with a truck with big tires, it overreacts to brake input. Not the Project LST. Make no mistake, the brakes are still crazy strong, but the optional fiberglass pads provide better modulation. The stock truck's stop-inducing grabbiness at low speeds had vanished.

Overall, I was really pleased to see what the Project LST could do on the track. The stock LST tends to wheelie quite a bit and has a lot of chassis roll (partly because of its large stock tires with soft sidewalls). Those two traits aside, it does just about everything well. But by adding more adjustable shock bodies, a Peak Racing Wasp engine and a few other select mods, I quickly transformed my stock LST into more of a true racer. Bench racers out there immediately wrote off the LST for racing because they thought it was too big or too heavy, or because it had a high/low tranny for all the backyard-basher guys. But this truck is more than capable on the track. With the right mods and some tweaking here and there, this truck tears it up! ■





XRAY & A-TEAM BAG THE 'BIRD

With more than 800 entries, the 2005 Snowbird Nationals in Orlando, FL, once again proved to be the king of all races. This on-road/oval race draws a huge crowd for the great racing that takes place on the transformable and temporary track in the Orlando Grand Plaza hotel. Here are some of the highlights:

Driving a Corally RDX, Jeff Cuffs got everyone's attention by winning both the Stock and Sportsman 19-turn touring car classes. But Jeff wasn't the only on-road racer to take home two of the big trophies as Jilles Groskamp of the Netherlands won Expert 19-turn and the coveted Modified class with an XRAY touring car.

Renowned on-road racer Barry Baker returned to his roots and tried his hand at oval racing. Barry took home the win in the Expert 19-turn class, and Sean Cochran (master motor builder for Reedy) won the Pro Modified class with his Team Associated Silva Concepts RC10L40 thus giving the A-Team its second win at the '05 Snowbirds.

Steve Peake put KSG Motorsports in the winners' circle in the Stock class, and Frank Polimeda crossed the finish line first in the Factory Modified class with his Custom Works machine.

ON-ROAD

Class	Winner	Chassis
Stock	Jeff Cuffs	Corally
GTP Stock	Mark Smyka	CRC
Sportsman 19-turn	Jeff Cuffs	Corally
Expert 19-turn	Jilles Groskamp	XRAY
GTP 1/2-scale Mod	Chris Tosolini	Corally
Modified	Jilles Groskamp	XRAY

OVAL

Stock	Steve Peake	KSG
1/2-scale 19-turn	Sonny Brown	KSG
Sportsman 19-turn	Barry Hill	Hyperdrive
Expert 19-turn	Barry Baker	Associated
Factory 6-cell Mod	Frank Polimeda	Custom Works
1/2-scale Pro Mod	Josh Cyril	CEFX
Touring Oval 19-turn	Eugene Ryder	XRAY
Pro 4-cell Mod	Sean Cochran	Associated



Modified Touring Car class winner Jilles Groskamp with second- and third-place finishers Mike Blackstock and Chris Tosolini.

HARA & TEAM ORION CLEAN UP AT THE DHI CUP

HPI and Team Orion on-road racer Atsushi Hara TQ'd and won the prestigious DHI Cup in Europe over a talented field of drivers that included Hara's Team Orion teammate and current ISTC World Champ Marc Rheinard. Hara used his signature series Revolution 12x1 modified motor, and all of the top four drivers used Team Orion/Peak modified motors and batteries to power their cars.



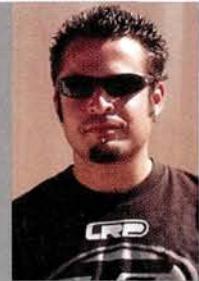
JP JOINS ASSOCIATED

Peak Racing's Joe Pillars will be running Team Associated's Factory Team B4 and T4 as well as the A-Team's GT for the '05 racing season. Pillars made a name for himself tuning Team Orion/Peak driver's motors at national events, and he burst onto the scene when he made the A-Main at the 2003 IFMAR World Championships. JP should give the A-Team a much needed lift in off-road racing.



AMEZCUA & CAVALIERI WIN WINTERCHAMPS

Hometown Hobbies and A-Main Raceways hosted the 10th Annual Winter Champs in Vancouver, WA. Several top pros represented their



sponsors, but the Team Losi stars took home the first-place hardware. Travis Amezcuia won both 2WD Modified and 4WD Modified, and his Team Losi/Trinity teammate Ryan Cavalieri won Truck Modified.



TEAM ORION HOOKS UP THE "HARD CHARGER"

Team Orion will be dishing out \$100 gift certificates to Best Buy for Sportsman drivers in the 1/10-scale and 1/8-scale classes at the Silver State Nitro Challenge, the Dirt Nitro Challenge and the ROAR Fuel Off-road nationals. The drivers who improve their qualifying position the most will be presented with a framed Hard Charger award and, of course, a gift certificate. In the event of a tie, the driver who finishes in a higher position in the Main event will receive the award. Depending on how well the contest is received, Orion may add the Hard Charger to other national events.

RACER NEWS UNDER THE HOOD

BY GEORGE M. GONZALEZ

Richard Saxton's

TTR EB-4 S3

RACE: RC PRO NORTH SERIES

RACE GEAR

Transmitter Airtronics M8
Receiver Airtronics Synthesized
Steering servo Ace DS-1211
Throttle servo Ace DS-1211
Engine Crano RS5
Clutch Stock

Pipe O'Donnell
Fuel O'Donnell
Glow plug O'Donnell
Tires Treadz
Body TTR
Gearing 13/48



SETUP	FRONT	REAR
Camber	1 deg.	1 deg.
Caster/anti-squat spacer	2mm	3mm
Toe	0	3 deg. in
Suspension holder (F/R)	FF1/FR	RF2/RR3
Steering plate	B	-
Rebound stop	22mm	24mm
Shock fluid	50WT	40WT
Shock piston/piston ball	TT/2	TT/2
Shock spacers (inside/outside)	0	0
Shock spring	Red 4.3 lb.	Red 3.2 lb.
Shock mount (suspension arm)	Outer hole	Outer hole
Shock mount (tower)	Upper middle	Upper 2nd hole in
Wheelbase adjustment (spacer)	-	3/2mm
Rear hub position	-	Upper inside
Rear upper-arm position (tower)	-	Inside 2nd hole up
Rear upright-pin position	-	Lower
Swaybar	Silver	Gold
Wing angle	-	Middle
Dif fluid (F/C/R)	5000/7000	5000



FACTORY & AFTERMARKET OPTIONS

Thunder Tiger Racing

7075 machined-aluminum parts

- Front & rear shock towers
- Center diff brace
- Aluminum servo-saver
- Upper-arm holder
- Steering slider
- Engine mount
- Wing posts
- Lightweight wheel-hex axles
- Lightweight hex nuts
- Upper-arm plate

- Hard-anodized swaybar pivot balls
- Lightweight pivot balls
- Swaybars (F/R) silver/gold
- Steel main gear
- Heat-sink disc brake

O'Donnell

- Cooling head
- Dual-chamber tuned pipe

Racers Edge

- 1100 NiMH receiver pack

FIND IT

» Go to page 234 for manufacturers' contact information



The Novarossi-based Crano RS5 engine wears an O'Donnell head and a dual-chamber spring-coupled tuned pipe.



The 7075-aluminum shock tower and upper-arm brace strengthen the front suspension. Richard also installed lightweight pivot balls, a front swaybar, and hard-anodized swaybar balls.



Factory Driver **HOT MOD**

To prevent the carb's dust boot from sliding off during long Mains, Richard secures it to the throttle arm with a zip-tie.



The red-anodized-aluminum wing posts look like jewelry! The 7075-aluminum rear shock tower looks good, and it's superstrong. The trick-looking shocks are stock, but the 3.2-pound springs are optional.



5 QUESTIONS

5

DRIVER: RICHARD SAXTON

AGE: 32

LAST BIG WIN: '04 WAS A BAD YEAR. IN 2003, I WON THE FINALS AT RC PRO SERIES

SPONSORS: THUNDER TIGER, TEAM ASSOCIATED, O'DONNELL, RACERS EDGE, TREADZ, BODZ, MIP, AIRTRONICS, ROBINSON RACING AND SMITH OPTICS



WHEN I'M NOT RACING
I LIKE TO: WATCH SUPERCROSS AND NASCAR RACES.

RC CAR ACTION: You don't just race for Ace/Thunder Tiger, you work there as well. What are you up to?

RICHARD SAXTON: I do a lot for Thunder Tiger; I help with product planning, R&D and testing new products. At Ace, I handle marketing, sales and the race team. Hell, sometimes I even sweep the floors and empty the waste baskets!

RCCA: You were involved with much of the S3 prototype testing. Does the final product reflect any "King Richard" personal touches that made it to production?

RS: Quite a few touches made it to production, but I can't take credit for the innovative design the TTR engineers came up with. It was a blast working on the S3 project, but it was also a learning experience. I'm a perfectionist, so I ended up second-guessing everything I did early on in the project, and then I would go straight back to what I did before to make sure it was the correct move. Plus, I had to think about what the average racer would like in a buggy. There are some tips that I have learned over the years, so I tried to get those into the manual. I would really like to thank some of the other people who helped on the car: Royce Lin, Vincent, Franco, Mr. Wei, Copper and Duane Silva. Without them, the S3 would have never made it to production.

RCCA: How does the S3 compare with the previous EB-4 buggy in terms of quality and performance?

RS: This is a new kit from the ground up. The previous car should have included a Dremel tool in the kit, but this one goes together like a dream. Our team in Taiwan did a fantastic job. Its performance is awesome compared with the old platform.

RCCA: The extruded chassis is unique, and it feels ultrarigid. Since the driveshafts pass through a tunnel in the center of the chassis, does that make it more difficult to access the drivetrain for maintenance?

RS: Because of the center brace, you have to run the carb a little sideways; that means you have to take the motor out to get to the center diff. Once you have access to the center diff, pulling the diff and the center universals is easy because of the split-diff-case design.

RCCA: What are some of your favorite features on the buggy? Does the S3 provide all the adjustments racers need to set up the buggy?

RS: The shocks are some of the best in the industry. The captured hingepins are cool and prevent binding, and the chassis is as rigid as a brick. I also dig the front shocks that are installed behind the tower. The car is completely adjustable, and it's very receptive to small changes. ■

SPONSORED BY:

- » Thunder Alley Raceway
- » RC Car Action
- » O'Donnell Racing
- » Pro-Line Racing
- » Team Associated
- » Team Losi
- » Ultimate Products



Billy Easton, Todd Hodge, Aaron Waldron and Lynn Waldron took turns wheeling the "Team Losi 1" Triple-XNT, but Billy Easton was behind the wheel when it crossed the line for the win.

After three hours of heads-up racing, Team Pro-Line's winning Kyosho 777 is ready for a trip through the car wash.



THUNDER ALLEY 3-HOUR NITRO ENDURO

Kyosho & Team Losi Stand the Test of Time **BY JASON SAMS**

When it comes to testing the nerves of drivers and the reliability of their cars, endurance racing is the ultimate challenge. If you think the pressure of wheeling your nitro car for a 30-minute Main is draining, try racing for three hours! That's exactly the type of racing that went down at Thunder Alley Raceway's first annual 3-Hour Nitro Enduro. Oak Valley Park in Beaumont, CA, is home to Thunder Alley, and the track was dialed; the soft, loamy track had elevation changes and tricky single and double jumps. It was the perfect setting for the Enduro.

RACE FORMAT

The Enduro wasn't three hours of mayhem. The rules were strict and designed to ensure that the race would remain a true enduro: wherein a single vehicle completes the full event—no backup cars. One rule was questionable: "One transmitter per team." This rule caused southpaw Ryan Cavalieri to sit out the race, since he would have had to drive with the right-handed radio shared by his non-lefty teammates.

- » Two classes: $\frac{1}{10}$ -scale Nitro Truck, $\frac{1}{8}$ -scale Buggy
- » All team members must drive in 45-minute shifts. At the end of the shift, the vehicle must pit for the driver swap.
- » Starting positions determined by random drawing.
- » Only one vehicle and one transmitter per team.
- » All vehicles must be equipped with AMB personal transponders.
- » Four drivers per team with a maximum of two pro drivers per team. At least one driver must be a "sportsman" without factory backing.
- » Every driver must turn-marshall.
- » All repairs must be made under the drivers' stand.

TRUCK ACTION

Lead by Jukka Steenari, "Team Losi 2" was out front for most of the race after Todd Hodge's Team Losi 1 suffered a broken turnbuckle early in the first 45-minute leg of the race. Team Pro-Line's Mark Pavidis held down second with the team's Mugen MST-1, but was a couple laps down from Losi 2. As the race wore on, the Mugen detonated its idler gear, and that forced the team to retire from the race. Team Losi 1 worked its way into second place, thanks to Billy Easton's flawless driving. Easton was running at a blistering pace after a lightning-quick rear-tire swap; Losi's quick-release wheel system was in full effect. As the race entered its final 45-minute leg, it was Billy and Jukka on the stand for a Losi vs. Losi battle. Billy was only a few laps down with nearly half an hour remaining in the race as he made up nearly three seconds a lap on Steenari. In the final minutes, those seconds added up, and he took the win in his first race as a Losi pro.



THE BUGGY BATTLE

The buggy race looked good for Team Jammin' until the Pro-Line guys swapped out their Crime Fighter tires halfway through the race to get additional traction and to shave seconds off their lap times. They were already down 10 laps, and pitting for the tire swap cost them a few more, but the gamble paid off. Scott Hughes was able to reel in Jammin' driver Dean Sexton, who was battling a loose car that was running on its original tires.

During the last 45 minutes of the race, Hughes was as much as three seconds faster than Sexton. The dramatic finish was fun to watch, as both teams were hooting and hollering at each other during the closing minutes of the race. When the clock ticked off the three-hour mark, Team Pro-Line took the win with one lap on the Jammin' crew.



THE WRAP-UP

The Thunder Alley 3-Hour Enduro Race was fresh and different not only because it was three hours long but also because it allowed friends who typically compete against each other to come together as a team. The racers had to work together in the pits for tire changes, repairs and battery swaps for the entire race. When the Team Losi and Pro-Line teams won, it wasn't just one guy who celebrated; it was the entire team, and that was cool to see. After the race, the Thunder Alley staff threw a tri-tip-style barbecue, and yes, it was freaking good! See ya next year—this race is sure to gain momentum and popularity. ■



TEAM ROSTERS

A total of 13 teams with drivers of all skill levels entered the Enduro. Notable pros were in attendance with factory-backed teams as well; here's the who's who:

TEAM LOSI 1

Drivers: Billy Easton, Todd Hodge, Aaron Waldron, Lynn Waldron
Chassis: Triple-XNT Adam Drake Edition 2
Tires: Team Losi
Engine: Trinity/Rossi .12 slide carb
Radio: Airtronics M8 with Spektrum module
Fuel: Trinity Platinum 20%
Receiver pack: Trinity 1200mAh

TEAM LOSI 2

Drivers: Jukka Steenari, Cody King, Paul King (Cody's dad), Buddy Lee
Chassis: Triple-XNT Adam Drake Edition 2
Tires: Team Losi
Engine: Trinity/NovaRossi
Radio: Airtronics M8
Fuel: Trinity Platinum 20%
Receiver pack: Trinity Lithium-polymer

TEAM PRO-LINE

Drivers: Scott Hughes, Tim Clark, Mark Pavidis, Alvin Yong
Truck chassis: Mugen MST-1
Tires: Pro-Line
Engine: Mugen MT .12 rotary carb
Radio: KO Propo Ex Helios
Fuel: O'Donnell 20%
Receiver pack: Team Orion

Buggy chassis: Kyosho MP-777

Tires: Pro-Line
Engine: O.S. V-spec
Radio: Futaba 3PK
Fuel: Sidewinder 30%
Receiver pack: Team Orion 2300 AA

TEAM JAMMIN'

Drivers: Dean Sexton, Jay Smoker, Jay Halsey, Chris G.
Buggy chassis: Jammin' X1 CR
Tires: Pro-Line Crime Fighter
Engine: Cronto RS5
Radio: Airtronics M8
Fuel: O'Donnell 30%
Receiver pack: OFNA 1400mAh

3-wire speed control install

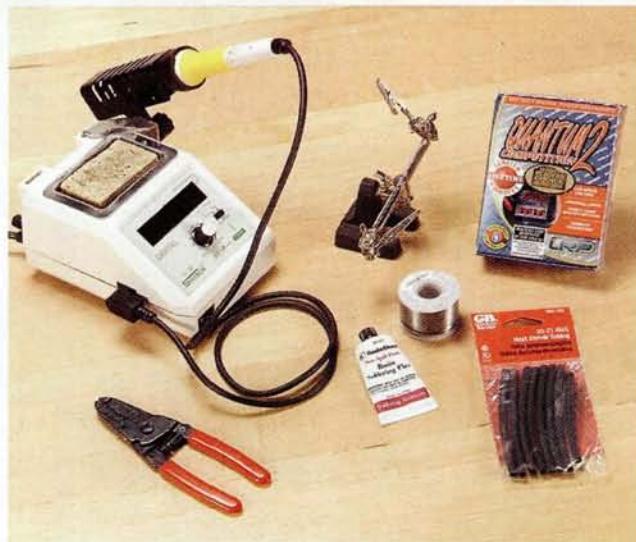
GET WIRED

REVERSING AND SPORT SPEED CONTROLS ARE USUALLY PLUG-AND-PLAY AFFAIRS, but when you're ready to upgrade to a high-performance, 3-wire, forward-only speed control, installation can be a little tricky. Part of what makes a 3-wire speedo "high performance" is the fact that you hard-wire it directly to the motor and battery for maximum efficiency. It takes a little skill, but it isn't hard—especially when you've got a step-by-step how-to to lead the way.

You'll need

- Soldering iron
- 60/40 rosin-core solder
- Soldering flux
- Wire stripper
- "Third hand" tool
- Heat-shrink tubing

Along with the proper tools, you need a speed control, of course. For this installation, we used an LRP Quantum Competition 2.



1 PLAN YOUR LAYOUT

Cut nothing. First, find where you need to mount your speed control, and then move the wires around to find the best routing. Remember: the red (positive) wire goes to the battery and the motor. When you've sorted out the wiring layout, use a Sharpie to mark the wires where you plan to cut them. Keep in mind:

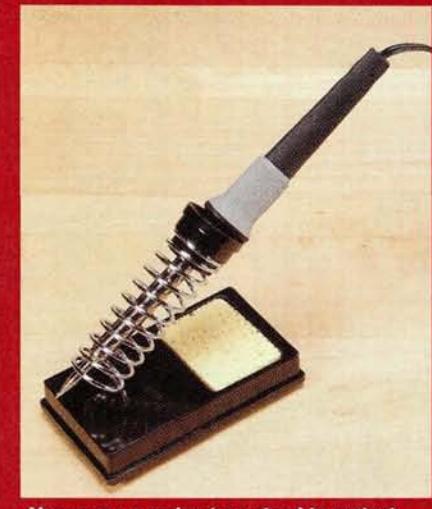
- » Shorter is better. The shorter the wires, the more efficient the setup.
- » But not too short! The wires should have a little slack once they've been soldered. If they don't, a crash may break the solder joints or pop the speed control's case open. Motor wires also need extra slack so you can move the motor for gear mesh adjustments.
- » Avoid interference. Make sure that the wires don't interfere with gears or the suspension components.



Before you cut any wires, temporarily tape the speed control to the chassis, run the wires to the motor and battery, and mark the wires where you want to cut them.

Safety first

Don't use the cheesy wire-stand-off tip holder typically included with inexpensive soldering irons. I guarantee that you will accidentally burn yourself, your bench, or other stuff you didn't want to burn holes into. Spend a little extra money get a spring-type "holster" with a weighted base. Most also have a spot for a sponge, so you can wipe the iron's tip clean between jobs. You should be able to get one for less than \$10, and you'll be glad you did.



Always use a spring-type stand to protect your benchtop—and yourself.

2 STRIP AND TIN THE WIRES

Cut the wires to length, then strip the ends. You don't need to strip a lot of insulation from the wires; $\frac{1}{4}$ inch is plenty. To tin wire, twist the exposed strands together tightly, then dab flux onto them. Heat the wire as you feed solder onto it. When you see the liquid solder "wick" into the wire, it's tinned and ready to be joined to the motor or battery.



Don't overdo it with the solder when you tin the wire. Extra solder will only wick under the insulation and stiffen the wire.

3 INSTALL A JUMPER WIRE

Sometimes, the speed control's positive lead can go from the battery to the motor (or vice versa, it doesn't matter) without a break, but many installations require you to install a short jumper wire. If your layout doesn't require a jumper, skip ahead to step 4. For the rest of you ...



1. Using a fresh blade, cut a "window" in the wire's insulation where the jumper will connect to it. Apply a dab of flux, and tin the exposed wire strands. Don't overdo it.



2. Cut the jumper wire to length, and then strip and tin both ends. Use your third hand tool to clamp the jumper alongside the wire it will join to so the tinned "window" and the tinned end of the jumper are side-by-side and touching.



3. Heat the joint and feed in solder until you see the joint fill in. Let it cool; then insulate the joint with a sleeve a heat-shrink tubing or tape.



Some installations require a jumper wire to help the positive wire reach both the motor and the battery.

Choosing a soldering iron

Use a pencil, not a gun. Gun-type irons are too unwieldy for RC work.

Get the best. If you can afford it, get a soldering "station" with adjustable temperature and a built-in stand. They're more versatile and more powerful for big jobs such as soldering speed controls and building packs, and they can be turned down for smaller jobs or to extend tip life.

Watts up! If you can only afford an inexpensive "non-station" iron, buy one that's rated for at least 40 watts—more is better.

Broader is better. If your iron comes with a fine tip, purchase the broadest tip you can find. A broad, flat tip is best for most RC work. Fine tips are only used occasionally for fine jobs such as fixing switches or splicing receiver-pack leads.



A "soldering station" (left) is a smart investment even for casual electric racers. If you have to go low-budget, make sure you get an iron rated at 40 watts or more.

"Do I have to hard-wire?"

If you want the performance benefits of a 3-wire speed control but prefer to use a battery connector rather than solder the wires directly to the battery, just splice into the positive wire, as shown here. Use the technique shown above to add a jumper wire, and then install the connector of your choice.



4 PREP THE MOTOR

If the speed-control manual calls for a Schottky diode or capacitors to be installed on the motor, now is the time to install them (the parts should be included with the speed control). Keep in mind:

- » Your motor may have surface-mounted capacitors or factory-installed caps; if it does, you won't have to install them yourself.
- » Schottky diodes are polarized. Make sure that you solder the end with the white stripe to the motor's positive lug.
- » For maximum efficiency and convenience, orient your motor so that the positive lug is closest to the speed control, and solder the caps or diodes to one pair of lugs; leave the other pair clear for the speedo's wires.



Always install the capacitors or diodes noted in the manual. If you install a Schottky diode, make sure that the striped side is attached to the positive lug.

S SOLDER THE WIRES TO THE MOTOR AND BATTERIES.

You're practically a soldering pro by now, so fire away. As you complete the installation, triple-check the polarity of your connections; if you solder the motor backwards, you'll pop the Schottky diode. If you solder the speedo backwards, you'll destroy it. Double-check the wiring diagram in your speed control's manual; for most, the blue wire is motor negative, the red wire is motor and battery positive, and the black wire is battery negative.



Triple-check the polarity of your connections before you solder the wires to the motor and battery.

6 TAPE THE SWITCH.

Place the switch where it isn't likely to be turned off or ripped off the chassis in a crash but is easily accessible with the body on. Use servo tape or Shoe-Goo to secure the switch so you can remove it later. Now all you have to do is plug the speed control into the receiver, follow the manufacturer's programming instructions, and the installation is complete.

FIND IT

» Go to page 234 for manufacturers' contact information

Soldering simplified

When upgrading to a high-performance, hard-wired speed control, strong solder joints are a must. Here are the basics:

Soldering-iron prep: make sure that the tip is clean. Let the iron heat up, and then wipe its tip on a damp sponge to clean it. To "tin" the tip, melt solder onto it, and let it sit for a minute; then wipe the excess solder onto the sponge.



Carefully check the condition of your soldering-iron tip. The one on the left is a good example of a clean tip; the one on the right, however

Tin the parts: "tinning" is the process of coating a part (in this case, a wire, motor lug, or battery bar) with solder before joining it to another part, and it's critical to a strong joint. Dab the part with flux, heat the part with the iron and then flow solder onto the part until it has a thin coating. This requires only a small amount of solder. Avoid melting a big blob onto the part.

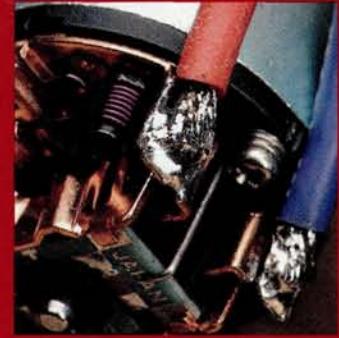


When you tin your soldering iron, don't go crazy with the solder. You only need a little.



Don't glop tons of solder onto a wire; it will make a mess and possibly make a weak bond.

Making a solid solder joint: now you're ready to join parts. The key to getting a solid joint is to use a high-quality iron (see "Choosing A Soldering Iron" for tips) and to make sure that the solder on both parts liquefies and flows together. When the joint is complete and cooled, flex it; a "cold" joint will pop apart, but a solid joint won't budge.



Here's a clean solder joint.





BY JOHN HOWELL

TRX 2.5 OVERHAUL.

You've run a few gallons of fuel through your TRX 2.5 engine, and it's seriously starting to lag. It has trouble firing up, there's almost no compression, and it won't idle properly. The bottom line? Your engine needs to be rebuilt. Don't worry; it's easier than you think. With this step-by-step guide, I'll help you get that tired-out engine back in top shape in no time.



To properly rebuild your TRX 2.5, you'll need the proper tools. The ballpoint pen makes a good "soft" tool for pushing the piston sleeve out of the case.



YOU'LL NEED

- 2.5mm hex driver
- 1/4-inch dowel, ballpoint-pen barrel, or similar blunt, non-metallic tool.
- Old toothbrush
- Needle-nose pliers
- Sensor-safe gasket sealant
- Nitro cleaner or denatured alcohol
- After-run oil (3-In-One or Marvel Mystery Oil will do)
- Traxxas backplate O-ring (item no. 5213), wristpin clips (5235) and piston/sleeve set (5230R)

DISASSEMBLE

1 Remove the engine from the truck, and unbolt the exhaust, carb and EZ-Start system. Stuff wadded-up paper towels into the carburetor's opening and into the exhaust port so no dirt can get into the engine during the cleaning process. Wipe any dirt and grime off the outside of the engine. I like to use a spray bottle filled with denatured alcohol. Carefully wet the engine with cleaner or alcohol and then use a toothbrush to loosen and remove the dirt and oily residue from the engine. For a more thorough cleaning, you can remove the clutch, but the flywheel can stay in place.

Clean debris off the outside of the engine case with an old toothbrush.



Stuff a piece of wadded-up paper towel into the carb opening to prevent any debris from falling into the crankcase when you clean the engine.



Remove the glow plug and throw it away; you'll install a new one after the rebuild.

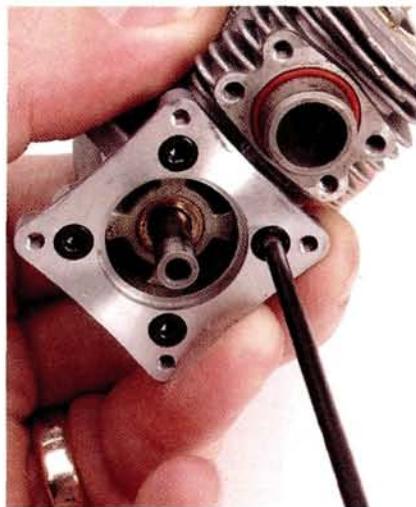


2 Remove the glow plug and throw it away; you'll want to use a new one after you've put the engine back together. Next, remove the head. Look out for the copper head gasket (shim), and make sure that you don't lose or crease it as you remove it. The gasket is very delicate, so handle it with care.



Remove the engine head and keep an eye out for the copper head shim. Be careful not to crease it—if you do, you'll need to get a new one.

3 Take off the EZ-Start's backplate by removing the four screws that secure it to the engine block, and then pull the backplate straight off. You may have to gently twist it as you pull it out of the case if it doesn't want to budge. Just be careful not to tear or damage the O-ring gasket between the case and backplate. If you notice that it is nicked or torn, get a replacement.



Remove the four screws that hold the EZ-Start backplate in place. When you take the backplate off, there could be slight resistance; you might have to twist it a bit to break it free.



4 With the backplate removed, look at the piston sleeve and connecting rod. Note the orientation of the piston-skirt relief and the oil hole in the rod so you'll know how to properly reassemble them when you put them back into the engine. In the TRX 2.5, the oil hole and the piston relief both face the crank.

Note the orientation of the conrod. You can't see its oil hole because it faces the crank.

Lifetime Replacement Plan

Did you know that Traxxas offers a lifetime engine-replacement plan that allows you to exchange your used Pro .15, TRX 2.5 and TRX 2.5R Racing Engine for a brand-new TRX 2.5R Racing Engine at 50 percent off the current retail price of a new engine? According to Traxxas, it's a "no-questions-asked" deal. No matter how badly your engine is worn or damaged (as long as it's complete), it can be exchanged for a new one at the special price. A benefit of the replacement plan is that standard TRX 2.5 engines are automatically upgraded to the TRX 2.5R Racing Engine for no additional cost. The "R" engine comes with a blue-anodized, machined-aluminum cooling head and special porting.

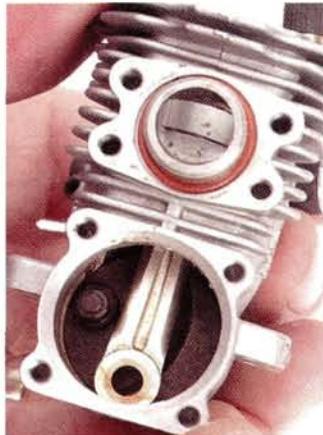
MAXX OVERDRIVE

S After you've noted how the parts are positioned, remove the sleeve. The most important thing to remember about removing a sleeve is: don't use a metal tool! Metal can damage the sleeve and the inside of the case. Carefully pull the sleeve out of the case. The sleeve typically fits inside the case fairly tightly, so you may have to push the sleeve out with a ballpoint pen. If the sleeve won't budge, you can heat the side of the engine case with a hair dryer or heat gun to loosen it. Just be careful that you don't heat the engine to the point where it's too hot to handle!



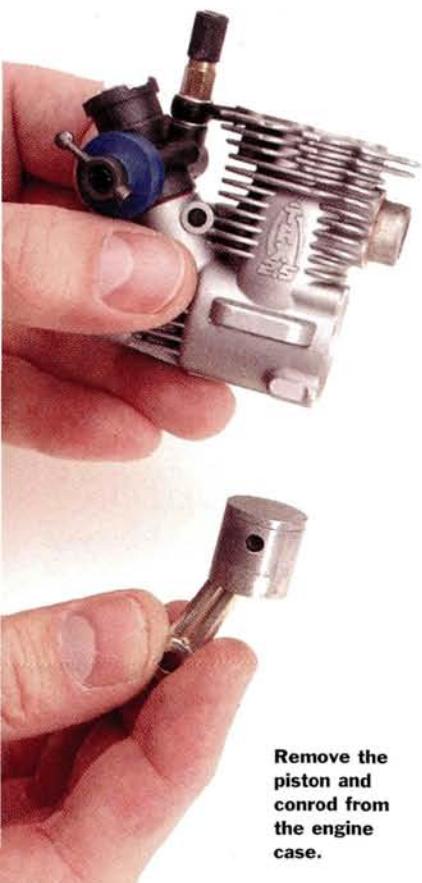
If you have a stubborn sleeve, push it out with a ballpoint pen through the bottom of the case.

When the sleeve is out, remove the conrod from the crank. If you can't get it to budge, tap the engine gently on a towel on your workbench.

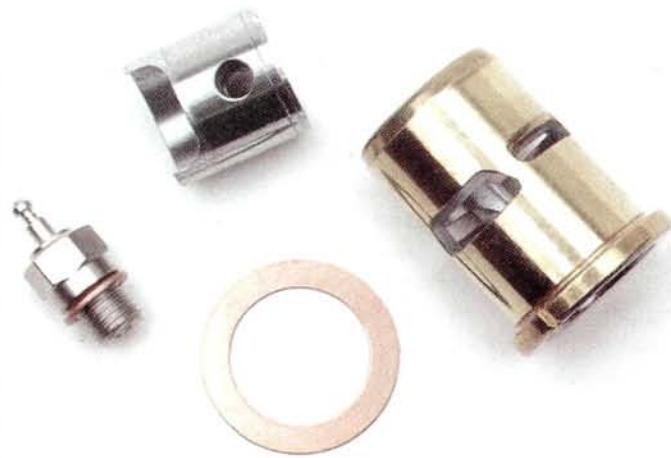


6 After the sleeve has been removed, take the connecting rod off the crankpin. Reach in through the back of the engine, and slide the bottom of the rod off the crankpin. If you can't reach it with your finger, lightly tap the back of the engine on a soft, padded surface (such as a folded towel), and the rod should just slip off the crankpin. After the rod has been separated from the crank, the piston and rod will come out the top of the case.

Remove the piston and conrod from the engine case.



REBUILD



Here are the new parts you'll use during the rebuild: a new glow plug, piston, sleeve and head shim (just in case the old one gets damaged).

1 Install a wristpin clip on one side of the piston. It is always best to use new clips, but if the original clips weren't bent during their removal, you can reuse them. Be careful that you don't scratch the side of the new piston when you insert the wristpin clip. You should be able to compress the clip with your fingers and then use something plastic to help guide it into the hole. To double-check that the wristpin clip is seated properly, push a hex driver against the clip. If the clip was inserted too deeply, it should shift and then pop into the groove. If the clip was not inserted deeply enough, it will pop out. Make sure that the wristpin clip is seated properly in the groove inside the hole in the piston.



Carefully reinstall the wristpin clips in the piston after you've attached it to the conrod.

Next, reinstall the connecting rod into the piston. Make sure that the piston and rod are inserted so they face in the correct directions; the oil hole should be on the same side of the piston relief. Coat the wristpin with after-run oil, and slide it through the piston and rod. Install the second wristpin clip on the other side, and check the seating of that clip as well. When both clips are seated properly, the piston and conrod assembly is complete.

maxx overdrive

2

Put the piston and conrod assembly into the block, and connect the bottom of the conrod to the crankpin. Place a drop of oil on the end of the crankpin and be sure it flows onto the rod bushing; this will ensure that the parts are properly lubricated during initial startup.



After you've installed the new piston and rod in the engine case, place a drop or two of oil on the conrod's bushing.

3

The next step is to insert the sleeve into the case. The tricky part is inserting the piston into the sleeve while you simultaneously place the sleeve into the engine. The easiest way to do this is to hold the engine upside-down so the piston hangs inside the case at bottom dead center (with the piston positioned at the bottom of its stroke). Now insert the new sleeve and work both parts until the piston gently slides into the sleeve—don't force it! It will probably take a few tries to get the pieces to fit together correctly.

After the piston is in the sleeve, press the sleeve into the block while being careful to line up the notch in the sleeve with the alignment mark on the block.



Turn the engine upside-down and slide the new sleeve into the engine case while gently trying to fit the piston into the sleeve.

Make sure that you've lined up the new sleeve with the notch in the engine case.

4

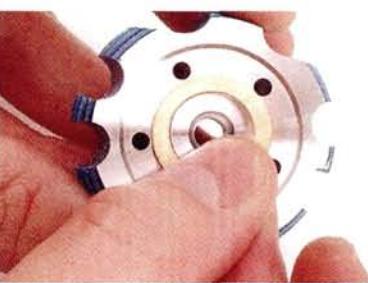
With the piston and sleeve inserted, the backplate can be rebolted onto the engine. Take one last look at the piston's and rod's orientations to make sure that they're properly installed before you button it up, then oil the backplate's O-ring to ensure a proper seal. For extra air-leak protection, you can also apply high-temp silicone sealant to the backplate's flange.



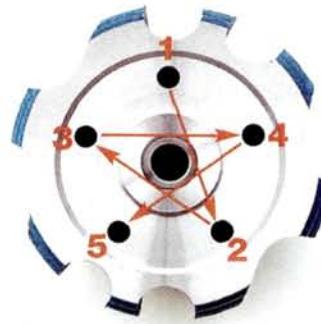
For additional security against air leaks, apply high-temp silicone gasket sealant around the edge of the case where the backplate mounts to it.

5

Now it's time to put the head back on. Replace the head gasket, and be sure the head is completely clean. Carefully place it on the engine, and drop the screws into the holes; thread them in just until they lightly touch the head. Then tighten them in sequence (shown in photo below) so that all the screws are snugged down evenly. Don't sock down one screw completely and then move onto the next; instead, tighten each screw incrementally as you go through the sequence a few times. The screws should all be of equal tightness when the job is finished.



Carefully place the head shim back on the head; make sure that you don't crease or bend it!



When reinstalling the head, it's important to tighten the bolts in a criss-cross pattern.

6

Before you bolt the EZ-Start back into place, remove the roller clutch (otherwise known as the one-way bearing) and clean it with denatured alcohol or nitro wash. Oil the roller clutch, and then slide it back onto the starter shaft. After you reinstall the EZ-Start, carb and exhaust, the rebuild is complete. But don't run outside and blast away at the throttle! The new piston and sleeve must be broken in, just like you did when the engine was new.



After you've cleaned the roller clutch (one-way bearing) in the EZ-Start, make sure that you lube it with a drop of oil.

See, that wasn't so hard, was it? Getting your engine back into top condition really takes no time at all, and the performance difference between a freshened-up and a clapped-out engine is like night and day. So hurry up and go break in that new engine so you can do this again a few gallons later! ■

©FIND IT

» Go to page 234 for manufacturers' contact information.



RC'S GREATEST EXPO IS BACK!

ON MAY 21 TO 22, 2005, the world's ultimate radio-control expo (better known as RCX) will invade the Anaheim Convention Center in Anaheim, CA, with nonstop RC car, boat and plane action. Show partners Air Age Media (publisher of *RC Car Action*) and Vision Entertainment will once again host the event. The '03 and '04 RCX shows were truly spectacular, and this year's event promises to be bigger, better and even more exciting, so you'd better get your tickets early!

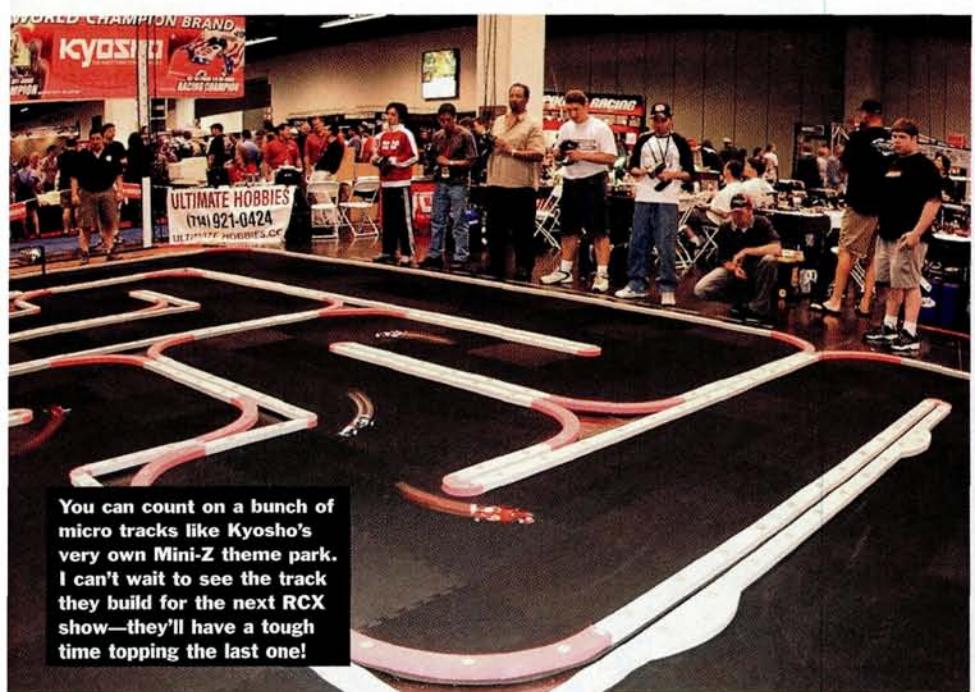
NEW FOR 2005

We've enlarged the off-road track with longer straightaways for high-speed action and larger jumps for sick, big-air stunts. Expect to see more pulse-pounding, pro-driver demos and head-to-head racing. The boat pond has been enlarged and relocated to allow nitro-burning deep-vees, tunnelhulls and catamarans to churn out some wet-and-wild wave action, and two fly zones will allow back-to-back RC aircraft aerobatics.

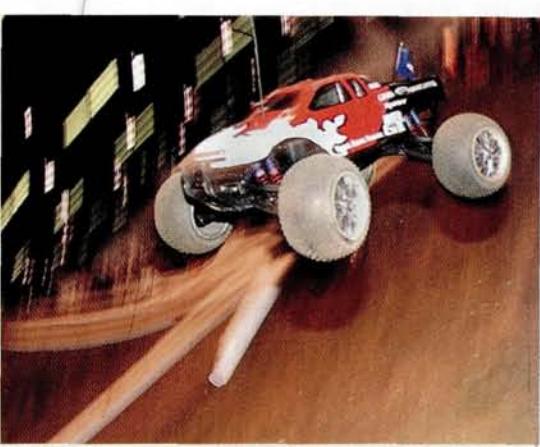
In fact, attending RCX will give you a rubber-neck experience like none other because full-throttle excitement will be everywhere you look: nitro-burning $\frac{1}{8}$ buggies and monster trucks pulling stunts on the freestyle track; RC airplanes and helicopters performing jaw-dropping aerobatic demos; and nonstop racing mayhem on the "Try Me" track, where you can take the controls for yourself.

You can check out all of the hottest RC products at the RCX Shopping Mall and meet major RC manufacturers, retailers and aftermarket companies. Airtronics, Team Associated, Pro-Line, CEN, Kyosho, Hobbico, Novak, OFNA, Trinity, Tamiya, Yokomo, Traxxas, Horizon Hobby, Hitec, Schumacher and many others will display their latest gear at RCX.

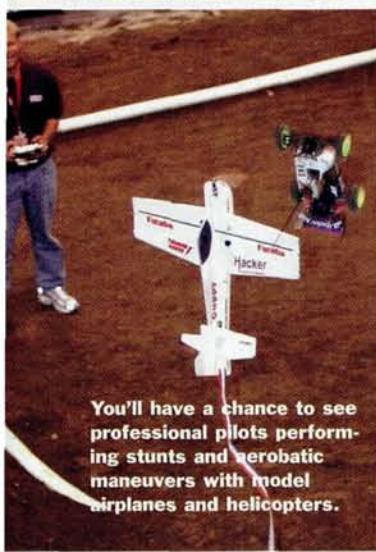
You won't want to miss the International Die Cast X Collectors Expo that will be held in conjunction with RCX. Join the thousands of collectors, traders and manufacturers at this inaugural event; it promises to be a die-cast lover's dream come true. We'll also give away prizes worth big bucks. So get ready to rock at RCX 2005! Tickets are on sale now at rcx.com; log on for all of the latest show info.



You can count on a bunch of micro tracks like Kyosho's very own Mini-Z theme park. I can't wait to see the track they build for the next RCX show—they'll have a tough time topping the last one!



Check out the latest die-cast models at the International Die Cast X Collectors Expo that will be held in conjunction with RCX.



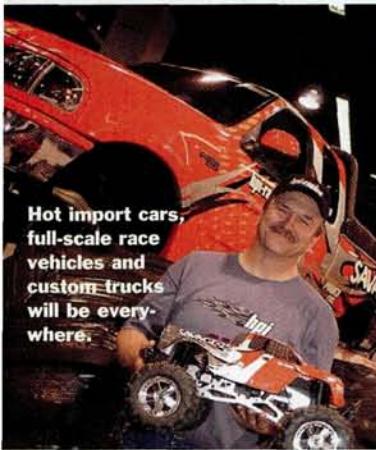
You'll have a chance to see professional pilots performing stunts and aerobatic maneuvers with model airplanes and helicopters.



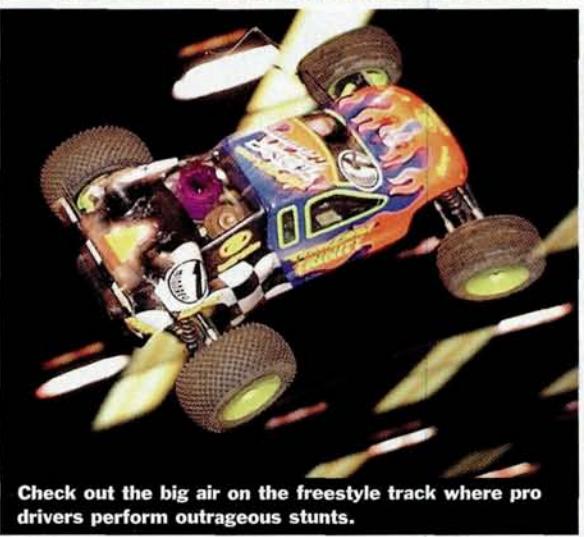
There's wild wave action in the boat pond. Don't stand too close unless you want to get drenched by the prop roost.



Be sure to stop by the Air Age Media booth to get free mags and decals. We'll be raffling off many other cool prizes, too.



Hot import cars, full-scale race vehicles and custom trucks will be everywhere.



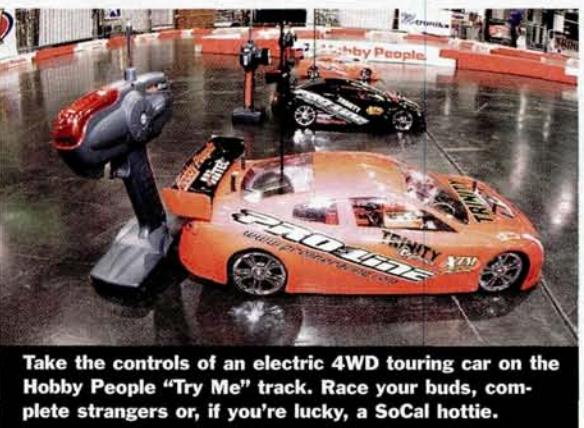
Check out the big air on the freestyle track where pro drivers perform outrageous stunts.



Of course, there will be tons of hot-looking girls and models passing out flyers, posters—and phone numbers, if you're really cool (good luck).



Take the controls of an electric 4WD touring car on the Hobby People "Try Me" track. Race your buds, complete strangers or, if you're lucky, a SoCal hottie.





All things Italian begin with Rossi

ROSSI IS ONE OF THE MOST FAMOUS NAMES in model engine manufacturing. The family earned its reputation by combining the precision skills learned in their father's watchmaking business with the passion that is so much a part of their Italian heritage. Rossi Engines was the birthplace of many innovations in today's modern competition engines. It started producing its own brand of engines in the early '60s making Rossi the "OG" of high-performance nitro engines. A rivalry eventually caused the brothers to part, and though it was tough on the family, it was even harder on the competition because the two grew even more passionate and motivated to beat each other. Brothers Ugo and Cesare, sons of Giovanni Rossi, laid the groundwork for what has become one of the most revered lines of competition engines the RC racing world has ever known. The new line of Axe/Rossi engines embodies the competitiveness and passion of the elder brother, Ugo Rossi, who though he died in 2002, now sets the standard for other top-quality nitro engines through his family. This month, we look at a few new Axe/Rossi engines and briefly discuss with his son Alessandro and sister Paola what brought them this far and their future plans for Axe/Rossi.

» R12 X3 AND XS

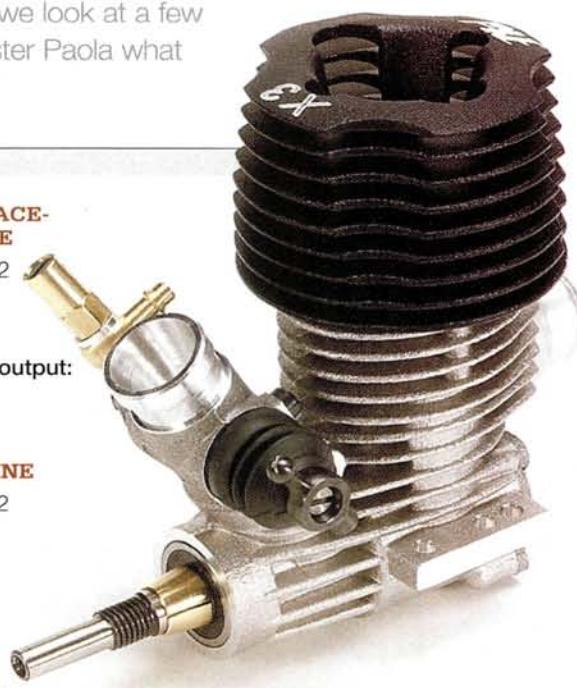
The newest small-block Axe/Rossi offering is the R12. It's available in race-legal 3-port trim and as more powerful outlaw version with a distinctive black engine block. The engine block on both versions is a little longer than average, and there are three engine-mounting holes in each mounting tab. Two of the mounting holes are for conventional small-block mounts, and the third allows the engine to be installed on mounts with slightly more space between the holes.

The 3-port model shown here includes the trademark oval cooling fins on the upper cylinder, but the round heat-sink head is more modern and conventional. The engine has a turboported crank, but a curious sleeve has been installed in the port to make it legal for EFRA racing. The U.S. versions of the engine should have the insert removed because the turbo porting is now legal for small-blocks in the States. The R12's head is designed for the use of a turbo glow plug, and a hot RT6 turbo plug is included.



R12 3-PORT RACE-LEGAL ENGINE

Item no.: 173R12
Bore: 13.8mm
Stroke: 14mm
Claimed power output: 1.7hp



R12X5 5-PORT OUTLAW ENGINE

Item no.: 174R12
Bore: 13.8mm
Stroke: 14mm
Claimed power output: 1.9hp

The X3's features are fitting for a competition .12 engine. Note the extra holes in the engine-mounting tabs.



» R21 LSK

This is the highbrow version of the buggy engine, and it has more tuning and performance-enhancing features. There's a 3-needle carb with a heat-insulating sleeve on its lower half, and there are 7, 8.5 and 9.5mm aluminum carb inserts. The sleeve has a 5+3 port configuration, and the piston has a couple of bypass ports punched through the piston skirt. A 2-piece cylinder head, a turbo crankshaft and a standard Rossi R6 glow plug round off the feature list of this competition buggy engine. The super long-stroke configuration of this new engine should give it the necessary bottom-end grunt to get a heavy buggy out of corners more quickly.



R21 LSK

Item no.: 160R21
Bore: 16mm
Stroke: 17.3mm
Claimed power output: 2.98hp

The LSK is Rossi's top-of-the-line off-road engine. It features ABC construction with a lot of ports and aggressive timing specs.



>>> R21 SPEED

The Speed version of the R21 is less expensive and features a unique block and more subtle features to keep costs much lower than those of the LSK. The Speed features ABC construction, a 5-port sleeve (minus the +3 ports) and a non-turbo crank. It's well featured with a similar 3-needle carb that has a durable steel sleeve where it's attached to the block. An aluminum 8.5mm insert forms the upper venturi, and like its counterpart, it will accept other inserts for more tuning options, but they're optional on this engine. The one-piece heat-sink head is made to fit standard glow plugs, and a Rossi R6 glow plug is also included. The crankshaft has a 9mm non-turbo center port and a 13mm outside diameter. Just trimming back on some of the more lavish features saves you roughly \$150 at the store, so this engine should pack a lot of punch for the money. ■

**R21 SPEED**

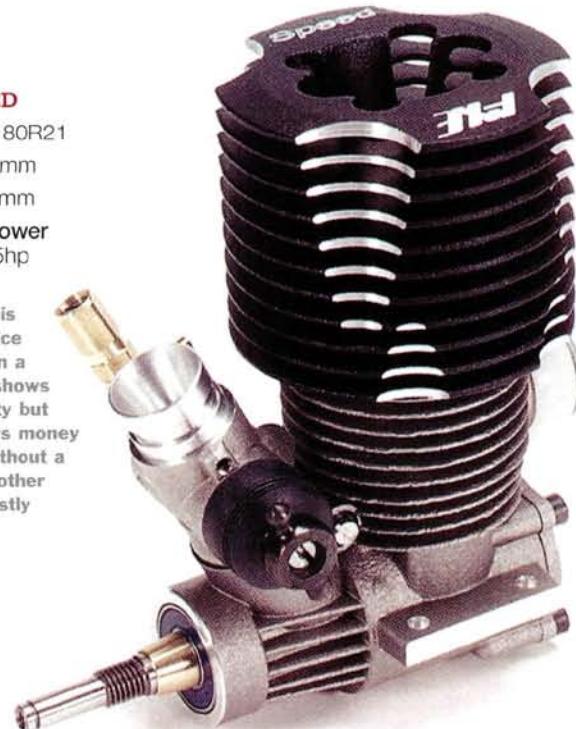
Item no.: 180R21

Bore: 16.6mm

Stroke: 16mm

Claimed power output: 2.5hp

The Speed is a good choice for those on a budget. It shows Rossi quality but saves racers money by going without a few of the other engines' costly features.

**©FIND IT**

>>> Go to page 234 for manufacturer's contact information.

Rossis Reveal All

An interview with heirs to the Rossi legacy

Q: Tell me when Rossi Engines started, and who was the inspiration behind it?

A: Rossi was started about 40 years ago by our father and uncle. They split in 1985; our father stayed with Rossi and our uncle opened Novarossi. Rossi stayed with RC airplane, boat and helicopter engines, and Novarossi specialized in car engines. Not too long after that, Rossi also started making car engines due to high demand, so right now, we have everything—car, airplane, helicopter and marine engines.

Two years ago, our father passed away, so Alessandro started a new company called Axe Motor this year [2004], and we've already started to produce specialized engines. You can get more history on our company by visiting our website at rossimotors.it.

Q: Was your father a modeler?

A: It started as a hobby for our father. He started with

airplanes and won many races; from that, he started tuning engines, and then he opened the company, but it all started with model engines.

Q: Why did your father and uncle split up?

A: Our uncle's second wife thought it was better for my uncle to have his own company to "express himself" better. She is a very strong woman and eventually persuaded our uncle to start his own company. I guess our father and uncle were kind of sad because they split.

Q: Did your father and uncle still get along after splitting up?

A: Yes and no because of his wife.

Q: What are the top things that make Rossi engines stand out from other engines?

A: Quality is the main goal of our company, so we always focus heavily on quality.

Technology is also very important. We are always researching new materials and manufacturing methods because they're so important. We are also trying to make products that the market needs—not to make an engine and then ask the market to accept it. We prefer to



Ugo Rossi, cofounder of Rossi Engines, got his start in the '50s building the fastest engines for control-line racing.

see and to understand better what the market needs.

Q: Do you do all of your own manufacturing and casting—everything?

A: Yes, everything is done by our company; everything.

Q: What are your goals in the RC car engine market?

A: The main goal is to make products that are reasonably priced for the U.S. market. Of course, we always talk about quality, so we want to have a good balance of price and keep the highest quality. This is our main goal. Then we will try to introduce new items that the market has never seen, such as our adjustable tuned pipe.

Q: In Europe, there is much more emphasis on .12 and .21 engines for competition, while in the U.S., there is also a high demand for big-displacement small-block and big-block engines for sport use and monster trucks. Will you be able to focus on these engines for this market?

A: Yes, oh, yes. That is why we are here. We want to make what the market needs. Definitely.



Liquid illusion

IF THERE WERE AN ALL-STAR LIST OF PAINTING EFFECTS, drip designs would be right at the top. Much like flames and streaks, drip graphics create the illusion of speed and action in a design.

Luckily, drips are easy to paint, and they can be easily customized for wild looks. Don't "run" away (sorry!) as I reveal the secrets of custom painting drip effects.



PAINTING SETUP

For this project, I used my standard painting procedure. I gently washed the bare shell (a Protoform 2004 Ford F-150) and then sprayed it with three coats of Bob Dively's Liquid Mask. I sketched a drip design on the outside of the body using colored markers, cut the masking freehand using a no. 11 hobby knife and airbrushed the design using Parma Faskolor paints.



Ready for paint. Colored markers make it easier to track what color goes where.



Hand-brushing white highlights on the drips creates the illusion of depth and gives the design a "wet" look.

SINGLE DRIP

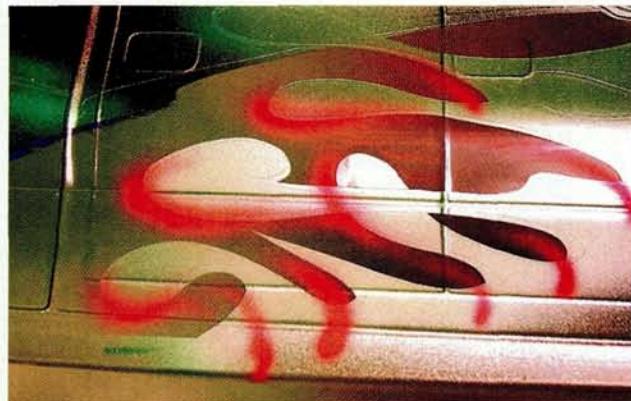
Simple drips are an excellent introduction to custom painting. Many people find painting difficult not because of the painting itself but because drawing a design can be hard. The beauty of drips, however, is that there aren't any rules; any drip is a good drip! The key to drawing them is to avoid straight lines. When you see pictures of a drip design you'd like to replicate, use them as a reference, and you'll quickly discover how easy it is to draw them.

On one side of the F-150, I drew a series of simple drips in a classic pattern without any overlapping. Using a hobby knife, I cut along the design and remove the masking that forms the body of the drips. For a clean look, maintain smooth curves with a steady hand as you cut out the drips. Now that the drips are exposed, hand-paint small white highlights at the tips of each drop using a fine paintbrush. These highlights will add depth to the drops without your having to resort to complex shading.

To keep things simple, I finished the drips by fading an approximately 2-inch-wide fluorescent green band into the tips of the drips and followed that with a similar fade of fluorescent yellow midway into the drips. The entire drip was then back-coated with white. This effect can also be created with spray cans. The background of the drips was then finished with a red to fluorescent orange fade. If you are comfortable using an airbrush, try spraying in some drop shadows for added depth.



Fades can be used to create even more depth; note the variations in the intensity of the green drips.



Shading beneath the drip adds another layer of depth to the illusion.



Shading the drips' "blobs" gives them a deep 3D look.



The 3D drip effect is enhanced with some creatively trimmed decals.

DOUBLE DRIPPING

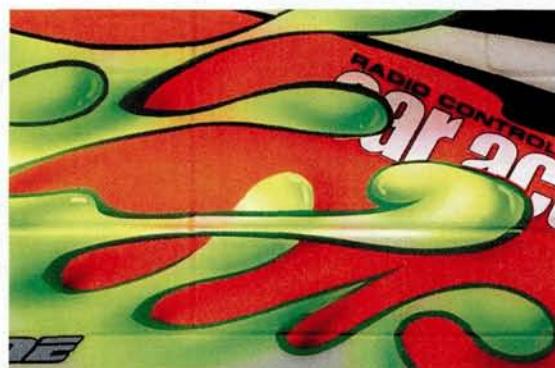
If simple drips aren't wild enough, many trick effects can be added to customize your design. Begin with a crazy graphic; complex drip designs can be drawn over and around it. Incorporate layered drips, overlapping drops, pinstripe edges, or stylized forms.

To create a more complex drip design on the remaining areas of the Ford, I started with a design similar to the first sequence; then I traced the drips and added an $\frac{1}{8}$ -inch pinstripe around them. I removed the mask for the stripe and painted it metallic green. Now the drip centers are ready to be painted. Add hand-painted white highlights (as previously described) first. Although I didn't do so here, you can also create these highlights by very carefully spraying white streaks with an airbrush.

At this point, I added complex shading to give the drips some character and depth. Starting with fluorescent green and again following with fluorescent yellow and then white, I airbrushed faded stripes into the body of the drips to create highlight points. Depending on the design, these should highlight the dips and curves to add a 3D quality to the stripes. Remember: in the case of overlapping drips, remove and complete only foreground sections of masking so shading in the underlying sections doesn't overlap.

•FIND IT

» Go to page 234 for manufacturers' contact information.



An $\frac{1}{8}$ -inch pinstripe around the drips creates a more graphic look.

Drip designs are excellent entry-level graphics to expand your painting skills. With a little practice, your wild drip designs will soon have everyone asking, "How'd he do that?!" Keep the paint flowing! ■

HITEC TG-SERIES Titanium-Gear Servos

Metals don't come much tougher than titanium, and toughness is exactly what the Hitec engineers had in mind when they came up with the latest TG-series digital servos. That's "TG" as in "Titanium Gear," and all of the new servos feature gears precision-machined from good ol' number 22 on the periodic table. There are three car models in the line (HSC-5996, 5997 and 5998TG), an even more powerful "all-purpose" model (HS-5955TG) and the ridiculously powerful HSR-5995TG that's designed for use in fighting robots. I tested the car models; they are designated by the "HSC" (Hitec Servo Car) code. They're identical in features and internal construction but vary in their gearing: the 5996 is geared for quick response, the 5998 is geared for torque, and the 5997 splits the difference.

FEATURES

TITANIUM GEAR TRAIN. Just look at the photo—those gears are huge! Steel gears would have been strong enough, but titanium makes them lighter. That speeds up a servo's response time and trims a few more grams from your car's overall weight.

O-RING-SEALED CASE. Do electronics ever like water? No. That's why Hitec specs eight O-rings to keep the H₂O out of the HSCs. There are tiny O-rings on the case screws: three to seal the case halves and heat sink and one on the servo's output shaft.

CORELESS MOTOR. A coreless-motor's rotor can accelerate and reverse direction more quickly than a brushed-motor's armature, so the servo responds more quickly to inputs.

BUSHED, HARDENED-STEEL GEAR PINS.

The servo's gear train is only as strong as the pins the gears ride on. The TG series' pins are made of hardened steel and plug into Oilite bushings to hold the gears rock-steady.

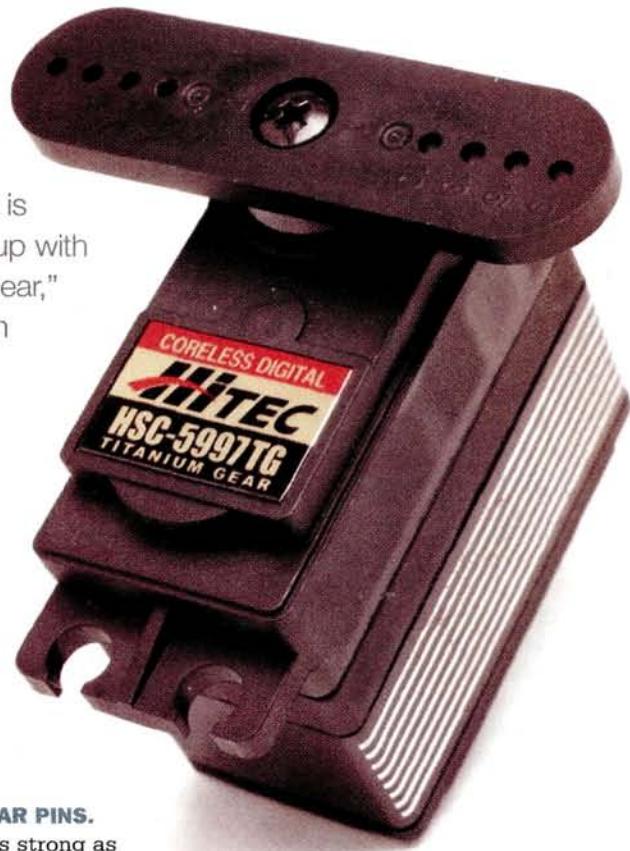
DUAL OUTPUT BEARINGS. Ball bearings are a must-have in a high-performance servo. As torque and speed increase, it becomes critical for the output shaft to operate as freely as possible. The TG servos use a pair of unshielded bearings on the shaft. Since the bearings are sealed inside the case, they don't need shields or seals of their own.

7-INCH HEAVY-DUTY LEAD WITH GOLD CONNECTORS. Ever wonder why some servos have super-long leads? It's an airplane thing; the long leads are needed to reach deeply into wings and fuselages—

two things cars don't have. Hitec specs a car-friendly 7-inch lead so you don't have to bundle a lot of excess wire, and its plug is fitted with zero-loss gold connectors for maximum efficiency. You can get the servos with a "JR-style" plug or a Futaba plug. Get the JR type; it fits everything, including Futaba.

HEAVY-DUTY SERVO ARM. There's no point in having a beefy servo if you're going to install a wimpy arm. Hitec supplies a chunky, double-ended 3mm-thick arm. It's reinforced with an aluminum collar around the lower boss so the splines don't spread under load.

Those gears aren't going anywhere! Note the O-ring on the output shaft and the heat-sink case.



Manufacturer's Specifications

	HSC-5996TG	HSC-5997TG	HSC-5998TG
Transit speed (sec. @ 4.8/6 volts)	0.13/0.10	0.17/0.14	0.23/0.19
Torque (oz.-in. @ 4.8/6 volts)	89/111	136/181	200/250
Gear type	Titanium	Titanium	Titanium
Bearing	Ball bearing	Ball bearing	Ball bearing
Weight	2.18 oz. (61.8g)	2.18 oz. (61.8g)	2.18 oz. (61.8g)
Dimensions (inches)	1.6x0.8x1.5	1.6x0.8x1.5	1.6x0.8x1.5
Price	\$125	\$125	\$125



EXTERNAL HEAT SINK. Work any motor hard, and it will get hot. That goes for servo motors, too, so the TG-series servos all have substantial aluminum heat sinks. The heat sink is actually part of the case, and it wraps completely around the servo.

DIGITAL OPERATION. Hitec's digital servos process signals five times faster than analog systems, so they have much higher resolution for finer control and superior holding torque than their analog-servo counterparts (up to three times higher, says Hitec).

EXTRA STUFF. I must be a geek because I'm almost as excited about the neat little plastic boxes the servos are packed in as I am about the actual servos. Along with the reusable box, Hitec throws in a decal sheet, an info sheet and rubber mounting grommets.

IN-CAR TESTING

Matt Higgins used Hitec's HSC-5998TG in the Associated TC4 he reviewed in the March 2005 issue, and he has been running it ever since with no problems. Torque wasn't an issue, as the servo's 250 oz.-in. was overkill for an electric touring car. Precise centering and quick response are what really matter in electric on-road racing, and Matt gave the servo high marks in both areas. He also noted that he keeps the TC4's servo-saver cranked down tightly, and that means every whack at the boards is transmitted squarely to the servo. So far, so good; no damage to report. And given

those beefy titanium gears, none is expected.

In this issue, Kevin Hetmanski has outfitted his Kyosho Giga Crusher with TG servos: a 5998 for steering and a 5997 for throttle/brake. The dual-engine monster was a much better test of the servo's steering strength than Matt's tourer, and Kev reports the servo performed very well in that he never had to think about it. "I turn the steering wheel, and the front wheels go where I want them to and stay there," says Kev. On the brake side, the 5997's 181 oz.-in. of torque was more than powerful

enough to stand the big truck on its front wheels with fine control on the way up to full lock.

BENCH TESTING

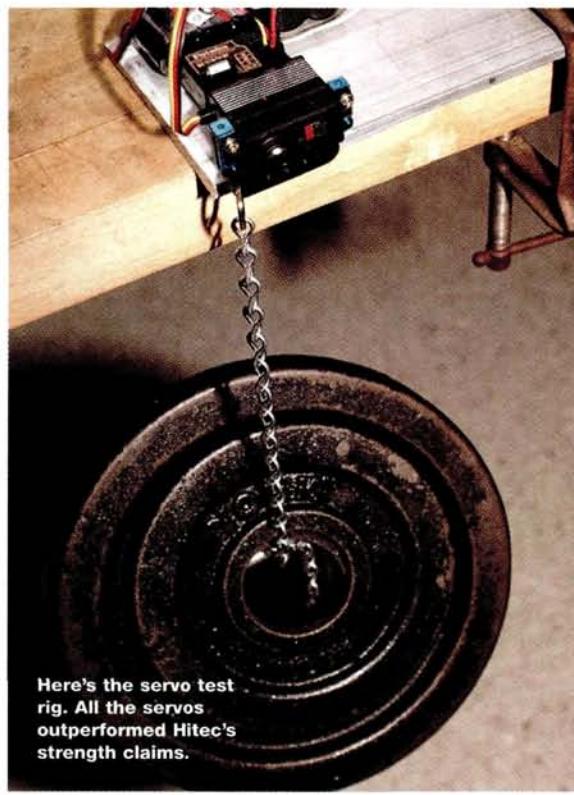
I'll admit, my "bench test" procedure isn't highly scientific, but it is very satisfying in its real-world-ness (if I may be allowed to make up that word). To test Hitec's torque claims, I bolted each servo to an aluminum mount and attached a chain to the servo horn almost exactly 1 inch from the output shaft, thus completing the "inch" part of the "ounce-inch" torque measurement. Now all I had to do was add the ounces; I did that in the form of iron weight plates—just like the ones that I never visit at the gym. I tested the maximum rated torque of each servo (see the spec chart) by hanging the weights from the level arm, and then I lowered and raised the weight across the servo's travel range. Each servo lifted the weight Hitec claimed it could, and the servos proved even stronger in terms of holding torque (that's the servo's ability to resist a force trying to deflect the output arm).

THE VERDICT

Hitec's new TG servos are more powerful than Hitec claims and have proven bulletproof in real-world testing. I also appreciate the pricing; more torque usually equals more dollars, but all three of the new TG servos are the same price (which makes sense, since they're essentially identical except for their internal gear ratios). Pick the speed and torque mix that suits your needs, and you're good to go. — Peter Vieira ■

FIND IT

» Go to page 234 for manufacturers' contact information



Here's the servo test rig. All the servos outperformed Hitec's strength claims.



You Can Program It

All of Hitec's digital servos can be programmed with the HFP-10 programmer. Once you jack in, you can adjust the servo's deadband, transit speed, neutral point and endpoints and even activate a built-in fail-safe and program the fail-safe position. If you're nervous that you might goof up the servo with any of these inputs, don't be; you can always go back the factory default settings. The HFP-10 is also useful as a servo checker; you can plug any brand of analog servo into the unit to check pulse width and voltage and the transmitter's signal pulse as well.

Ace Hardware Hobbies
(800) 383-2657;
ace-hobbies.com.

Airtronics (714) 978-1895;
airtronics.net.

APS Racing distributed by
Magma Intl. (905) 886-1808;
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Hardcore Racing Components
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Novak Electronics Inc.
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Crystal Park Raceway, Compton, California 90202-4925; James Reese, 310-631-0307; email: mailto:info@crystalparkraceway.com

Mobile Miniature Speedway, Theodore, Alabama 36582; Richard Sweetser, 251-653-6643; email: jbogard@comcast.net; web: mywebsites.comcast.net/jbogard

Delta R/C Raceway & Hobbyshop, Antioch, California 94509; Don or Kraig, (925) 778-2965; email: deltarc@comcast.net; web: www.deltarc.com

North Cullman Raceway, Cullman, Alabama 35055; Daniel Lollies, 256-775-2491; email: cullmanrcobbies@yahoo.com; web: www.cullmanrcobbies.homestead.com

Extreme RPM Hobbies, Grand Terrace, California 92313; Bobby Haney, 909-370-3379; email: extremerrpmrace@aol.com; web: www.ExtremeRpmRacing.com

Oak Mountain Hobbies, Pelham, Alabama 35124; Jay Simpson or Charles Rosato, (205) 685-8980; email: jsimp@oakmtnhobbies.com; web: www.oakmtnhobbies.com

Hobby Central Raceway, Poway, California 92064; Lee, (858) 513-0373; web: www.hobby101.com

ARIZONA

HobbyTown Raceway--Tuscon AZ, Tucson, Arizona 85713; Jay, (520) 882-8888; web: www.hobbytown.com

HobbyTown U.S.A.--Phoenix AZ, Phoenix, Arizona 85044; Doug McFarland, (480) 598-5282

R/C Sports Mania Raceway, Phoenix, Arizona 85017; Mike Lubanovich, (602) 278-3671; email: info@rcsportsmania.com; web: www.rcsportsmania.com

Paradise Performance Hobbies, Rohnert Park, California 94928; Jake, (707) 586-3375; email: jphrasing001@aol.com; web: www.jphrasing.com

Scottsdale R/C Raceway, Scottsdale, Arizona 85251; Scott Anfinson, 480-945-2186

Hot Rod Hobbies, Saugus, California 91350; Jimmy Babcock, (661) 255-2404

Paradise Hobbies & RC Raceway, Paradise, California 95969; David Lafabregue, (530) 877-6447; email: paradisehobbies@aol.com; web: www.paradisehobbies.com

ARKANSAS

Alison OffRoad RC Raceway, Little Rock, Arkansas 72206; Steve Alison, (501) 490-1227; email: otto@alisonoffroad.com; web: www.alisonoffroad.com

GS Hobby, Ft. Smith, Arkansas 72901; Bryon Shumate, (501) 648-1994; web: www.gshobby.com

Sparks R.C. Raceway, Paragould, Arkansas 72450; Tommy Sparks, (870) 239-3606

Racer's Haven Raceway, Bakersfield, California 93309; Greg Cooper, 661-835-0441; web: www.racers-haven.com

Rescue Mini R/C Speedway, Rescue, California 95672; Bruce Pease, (530) 621-3948; web: www.innercite.com/~rcracing/

Ripon R/C Speedway, Ripon, California 95366; Dan Tanis, (209) 599-5160

Sacramento RC Racing & Hobbies, Sacramento, California 95824; Andreas Muller, (916) 424-4001; email: andreas123@earthlink.net; web: www.77sunset.com

Capital City R/C, Sacramento, California 95829; James Patterson, 916-383-3445; email: capitalrc@hotmail.com; web: www.capitalrc.com

Castle Hobbies, San Jose, California 95124; Steve Scott, 408-377-3771; web: www.castlehobbies.com

ESRC, Seaforth, Delaware 19973; Bill Auchterlonie, 302-734-2757/302-629; email: aeromarine@erols.com

B&T RC Central, Fort Walton Beach, Florida 32547; Tim, 850-863-1666

FLORIDA

Monza R/C Speedway, Miami, Florida; Ed Delgado, (305) 437-9895

Morris Kohl's Raceway and Hobby Shop, Tampa, Florida 33604; Morris Kohl, (813) 931-1626

My Rose Hobbies & Crafts, Jupiter, Florida 33458; Mark Watson, (561) 744-3800

First Coast Speedway, Jacksonville, Florida 32211; Bobby Phillips, 904-716-0861; web: www.firstcoastautotracing.com

NORRA, Naples, Florida 34116; Mike Brigham, (239) 398-4332; email: NORRA_RC@yahoo.com; web: www.geocities.com/norra_rc

Pro Hobbies Speedway, Apopka, Florida 32712; Jim, (407) 886-4615; email: prohobby@juno.com

Sarasota RC Speedway, University Park, Florida 34201; Jim Wilson, (941) 358-7047

South Palm Beach Racers, Boca Raton, Florida 33486; Mike Fazio, 561-338-5367; email: epine01@bellsouth.net; web: <http://communitylink.gobpi.com/group/spbclub>

Superior Hobbie R/C Parking Lot Racing, Casselberry, Florida 32707; (407) 834-9299; email: racing@superiorhobbies.com; web: www.superiorhobbies.com

SWF RC Car Club, Fort Myers, Florida 33908; Hobby House of Ft. Myers, 239-419-0033; email: hobbyhouseofftymyers@msn.com

Tallahassee R/C Speedway, Tallahassee, Florida 32301; Tim Cook, 850-514-3365; email: idothre@hotmail.com; web: www.tallahasseerc.com

Tampa R/C Raceway, Seffner, Florida 33584; Carole Raimondi, 813-655-6366; email: carolehobbytown@aol.com

Treasure Coast R/C Club, Palm City, Florida 34990; Doug Goethel, 772-283-2260; email: 1ringo@adelphia.net

KEY TO SYMBOLS

	Indoor		Concrete
	Outdoor		Asphalt
	Off-road		Minis & Micros
	On-road		On-site hobby shop
	Oval		AC power
	Dirt oval		Auto lap counting
	Carpet		Food available

West Coast R/C Club, Lutz, Florida
33549; Jim Larrimore, 813-368-4962



GEORGIA

Augusta R/C Racers Club, Augusta, Georgia 30909; Darren, 706-860-5608; web: Augusta.rc.freehomepage.com



Dalton Motorsports, Dalton, Georgia 30721; Keith Manton, 706-226-6699; email: dmso@atoleo.net



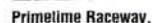
Echeconee Superspeedway, Macon, Georgia 31216; Clifford Kline, 478-256-2032; email: gtock1000@aol.com



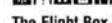
Hobby Town Raceway, Columbus, Georgia 31909; Frank Bastos, (706) 660-1793; email: fbastos@mindspring.com; web: www.hobbytown.com



Phil Hurd Raceway (S.C.O.R.E.), Savannah, Georgia 31406; Dana Franklin, Club President, 912-308-8545; email: bonescom@bellsouth.net; web: www.score-racing.org



Primetime Raceway, Calhoun, Georgia 30701; Tommy Jackson, 706-625-9037; email: primetimehobby@gccinternet.net



The Flight Box Hobby Shop, Rome, Georgia 30161-6826; Leslie Duke, (706) 234-3014

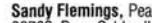


HAWAII

A.S.I. Racing, Kapaa Kauai, Hawaii 96746; Arnold Morales, 808-821-8132



Radio Control Assoc./Alaa Park Raceway, Pearl City, Hawaii 96782; Ace RC Products, (808) 456-1279

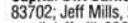


Sandy Flemings, Pearl City, Hawaii 96782; Dave Caldwell, 808-456-7272; email: info@formula1-rc.com; web: www.formula1-rc.com

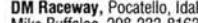


IDAHO

Almosta Ranch RCIs, Twin Falls, Idaho 83301; Casey Clements, (208) 733-8667; email: cclements2@msn.com



Capital Dirt Burners, Boise, Idaho 83702; Jeff Mills, 208-376-8932; email: jefmills92@msn.com; web: www.capitaldirtburners.com

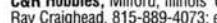


DM Raceway, Pocatello, Idaho 83201; Mike Buffaloe, 208-233-8163; email: mike@dmraceway.com; web: www.dmraceway.com



ILLINOIS

AJs Raceway & Hobby, Dekalb, Illinois 61115; AJ, 815-756-2772; web: www.ajsraceway.com



C&R Hobbies, Milford, Illinois 60953; Ray Craighorn, 815-889-4073; email: thomas@mailnet.net



C.I.R.C.A., Jacksonville, Illinois 62650; Randy Tendick - Sport-N-Hobby, (217) 245-1375; web: <http://www.geocities.com/jaxcirca/>



His N Hers Hobbies Raceway, Normal, Illinois 61761; Kevin Turek, 309-862-3080; email: hisnhershobbies@aol.com; web: www.hisnhershobbies.com



HobbyTown USA - Oak Park, IL, Oak Park, Illinois 60301; Mark or Fred, (708) 445-8056; email: htuopil@aol.com



Machesney Park Raceway, Machesney Park, Illinois 61115; Gina, (815) 282-1311; email: mpr30@aol.com; web: www.mpr30.homestead.com



Monee R/C Raceway, Monee, Illinois 60449; Roy or Roberta Moody, (708) 534-2422



Venture Raceways, Libertyville, Illinois 60048, (847) 549-6963



INDIANA

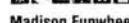
Bremen Racing Ent., Bremen, Indiana 46506; Dale Heuberger, 219-546-3807



Duneland Hobbies & Raceway, Portage, Indiana 46368; Ron, 219-763-1610; email: RTrobaugh1@email.msn.com; web: www.dunelandhobbies.com



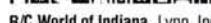
Hobby Barn Raceway, Terre Haute, Indiana 47802-9694, (812) 299-5773



Madison Funwheelers Carpet Oval, Madison, Indiana 47250; Charlie Hatchel, 1-812-866-8930



Pete Russell's R/C Speedway, Elkhart, Indiana 46516; Pete Russell, 574-293-1827



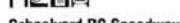
R/C World of Indiana, Lynn, Indiana 47355; Jon Kolp, (765) 874-2464; email: rcworld@rcworld.com; web: www.rcworld.com



RC Barn, Monroe, Indiana 46772; Mark Lengerich, (219) 692-6600; email: daddyg@adamswells.com; web: www.rcbarn.com



RCR CR Raceway, Bonville, Indiana 47601; Scott Payton, 812-573-5087; email: email@rccrrc.com; web: www.rccrrc.com



Schoolyard RC Speedway, Lagrange, Indiana 46761; David W. Bryan, 260-463-3598; email: dwbyran@loci.net; web: www.rcspeedway.net



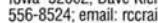
Showtime Lot Racing, Fort Wayne, Indiana 46819; Mike Romines, (219) 478-6099; web: fortwaynercpark.tripod.com/



IOWA
Ames Radio Control Speed Assoc., Ames, Iowa 50014; Ryan Davis/Brad Scandrett, 515-231-3813/515-432; email: Davismotorsport@aol.com



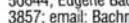
Dubuque R/C Speedway, Dubuque, Iowa 52002; Dave Kleinschmidt, 563-556-8524; email: rccraig7@aol.com; web: www.geocities.com/dbqrc/



Hobby Haven, Urbandale, Iowa 50322; Rick Marble, (515) 276-8785; web: www.hobbyhaven.com



Independence, Independence, Iowa 50644; Eugene Bachman, 319-266-3857; email: BachmanE2@hotmail.com



Iowa City R/C Racing Association, Iowa City, Iowa 52240; Hobby Corner, (319) 338-1788



St. Charles RC Speedway, Destrehan, Louisiana 70047; Al Cazalot, (504) 764-0625; email: stcharlesracer@home.com; web: members.home.net/stcharlesracer



IROAR-Vinton Raceway @ Vinton Roller Rink, Cedar Rapids, Iowa 52402; Ed Karr, 319-362-1291; email: boxkarhobby@aol.com



Manly R/C Club, Manly, Iowa 50456; Bruce Hill, (641) 454-2025



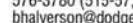
Marble's Raceway, Des Moines, Iowa 50317; Rick Marble, (515) 262-7507



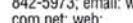
Radio Control Raceway Park, Fort Dodge, Iowa 50501; Bernie Halverson, (515) 576-3780; email: bernieh@frontiernet.net



RiverFront Speedway, Fort Dodge, Iowa 50501; Bernie Halverson, (515) 576-3780 (515-57); email: bernieh@dotdgenet.com



Wild Bill's Raceway, Knoxville, Iowa 50138; William Anderson, Jr., 641-842-5973; email: wildbilz@iowatele.com; web: www.wildbillsracing.com



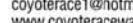
KANSAS
D&B Raceway, Menlo, Kansas; Ron Ball, (785) 855-2370



KENTUCKY
Coyote Raceway, Lexington, Kentucky 40505; Steve M., 859-253-9330; email: coyerace1@hotmail.com; web: www.coyeraceway.com



Dixon's R/C RaceWay, Hazard, Kentucky 41701; Jeff Dixon, (606) 436-4820; email: jeffdr1@hotmail.com



Mayking R/C Speedway, Mayking, Kentucky 41837; Jon Fields, 606-633-4700; email: jon1@se-tel.com



Pit Stop Hobbies, Paducah, Kentucky 42003; Robert or Rodney, 270-443-0052; email: pitstop1@apex.net



R.C.WOW, Falmouth, Kentucky 41040; John P. Jones, (859) 654-1700; email: rcwow@fuse.net; web: www.rcwow.com



Schoolyard RC Speedway, Lagrange, Indiana 46761; David W. Bryan, 260-463-3598; email: dwbyran@loci.net; web: www.rcspeedway.net



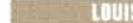
Showtime Lot Racing, Fort Wayne, Indiana 46819; Mike Romines, (219) 478-6099; web: fortwaynercpark.tripod.com/



Wildcat Speedway, Nicholasville, Kentucky; David Bowles, 859-272-0231



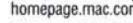
LOUISIANA
Fast Pace Hobbies, Alexandria, Louisiana 71301; Joseph or Casey Toralba, 318-561-2070; email: fastpacehobbies@aol.com



Gator R/C Raceway, Moss Bluff, Louisiana 70612; Tony Diaz, 337-855-3206; email: keithsjac@aol.com; web: homepage.mac.com/kmaples/



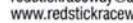
Hwy. 44 Hobby Shop, Gonzales, Louisiana 70737; Eric Olmstead, (225) 644-1773; email: eric209@aol.com



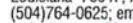
Red Stick R/C Raceway, Baton Rouge, Louisiana 70814; Michael Pino, 225-218-1002; email: redstickraceway@aol.com; web: www.redstickraceway.com



E.U.P., Kincheloe, Michigan 49788; Joel Wiggins, 906-495-3503



Fastrax, Brownstown, Michigan 48173; Greg Yingling, (734) 379-8980; email: fast33@hotmail.com



MAINE

Central Maine R/C Speedway & Hobbies, Fairfield, Maine 04963; David Prescott, (207) 453-4588; email: rcracer@mint.net



Clay Bowl R/C Hobbies, Greene, Maine 04236; Pat Cap, (207) 946-5003



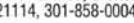
Great Lakes Racers Club, Grand Rapids, Michigan 49585; John Warner, 616-838-2231; email: Gr8LksRacers@aol.com; web: www.rogers3.com/glrc/



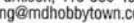
Hideaway Raceway, Napoleon, Michigan 49201; David Carlisle, 517-536-8821; email: adcarlisle1@netscape.net



Jons Hobby, Mt. Pleasant, Michigan 48858; Jon Beutler, 989-773-5412; email: jonshobby@earthlink.net; web: www.jonshobby.com



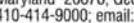
JT Superspeedway, Battle Creek, Michigan 49015; Jerry or Sam, 616-965-0116



Larry's Performance RC Carpet Track, Sterling Heights, Michigan 48314; Larry, 586-997-4840; email: lprcs@qwest.net



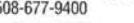
Lazer RC Speedway, Adrian, Michigan 49221; Russ Johnson, (517) 263-2806



N.M.R.C.C. Speedway, Gaylord, Michigan 49735; Gabe, (989) 732-3963; email: hobby-toy@voyager.net



R.D.H. Hobbies & Racing, Portage, Michigan 49002; Rex Simpson, (616) 323-3686; web: www.rdhobbies.com



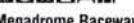
R.A.C.E. Inc., Jackson, Michigan 49203; Sam Sprang, (517) 787-9161



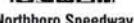
Raw Roots Race Tracks, West Olive, Michigan 49460; Roy Bennink, (616) 399-9338; email: rstb@mt.net



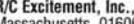
Village Hobbies, Hesperia, Michigan 49421; Al Deater, 231-854-6666; email: vhobbies@hotmail.com; web: vhobbies.dats.net



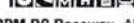
Village R/C Raceway, Decatur, Michigan 49045; Chuck Nolke, (616) 423-7878



Country R/C Raceway Park, Belview, Minnesota 56214-8115; Charles L. Steffl, 507-641-8115



Jis Radio Control Race Park, Starbuck, Minnesota 56381; Jay Campbell, (320) 239-4827



Kevinis Off-Road Raceway, Crookston, Minnesota 56716-2317; Kevin Altepeter, (218) 281-7523; email: kevin@krcproducts.com; web: www.krcproducts.com



National Speedway, Fridley, Minnesota 55432; Steve Hedenland, 763-571-9283; email: mrtip@national-hobby.com; web: www.nationalhobby.com



Northwoods Hobby Raceway, Brainerd, Minnesota 56401; John or Doug, (218) 829-9257



Twin Cities Hobby & Raceway, Brooklyn Park, Minnesota 55428; Mark O'Brien/Ray Cook, (763) 315-8700; email: wooduster@msn.com; web: www.twincityhobby.com



Meridian RC Speedway, Meridian, Mississippi 39302; Joe or Pearce, 601-483-7000



Small Cars Unlimited, Jackson, Mississippi 39212; Ed Hill, 601-372-3278; email: fast@smallcarsunlimited.com; web: www.smallcarsunlimited.com



X-Treme RC, Saucier, Mississippi 39574; Marty Capers, (228) 539-2004



MISSOURI

B&L Hobbies & Raceway, Park Hills, Missouri 63061; Bob Marler, (573) 431-9444; web: www.bandblhobbies.com



Fastlane Raceway & Hobbies, Blue Springs, Missouri 64015; Shane & Randy, (816)220-0100; email: info@fastlaneracing.com; web: www.fastlaneracing.com



Hobbies In Motion Raceway, Springfield, Missouri 65803; Matthew Froning, 417-866-9621; email: mrrkid-turismo@aol.com; web: www.gor-c.com



North Missouri Raceway, Chillicothe, Missouri 64601; Billy Johnston, (660) 646-1120



Novelty R/C Raceway & Hobbies, Novelty, Missouri 63460; Rex & Jena Franke, 660-739-4530; email: noveltyrc@noveltyrc.com; web: www.noveltyrc.com



Ozarks R/C Raceway, Springfield, Missouri 65803; Gene Rhodes, 417-873-9350(Track); email: OzarksRaceway@aol.com



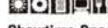
RCTRAX Racing Club of Central Missouri, Hallsville, Missouri 65255; Gary Phillippe, 573-442-8183; email: philippe74@verizon.net



Real Blue Vue R/C, Kansas City, Missouri 64133; Steve Hale, (816) 358-0238; email: hrealrc@aol.com; web: www.geocities.com/real_rc_race-way



Real R/C Raceway, Pleasant Hill, Missouri 64080; Steve Hale, (616) 540-5584; email: hrealrc@aol.com; web: www.real-rc.com



Showtime Speedway, Bakersfield, Missouri; Don Risner, (601) 203-1481



MONTANA

Garden City R/C Speedway, Missoula, Montana 59801; Brian Culp, (406) 549-7992; email: gardencityrc@msn.com



Magic City Racers, Billings, Montana 59102; Bryan Grummert, 406-656-8266; email: jsaves@tgrsolution.net; web: www.magiccityrc.com



KEY TO SYMBOLS



Indoor



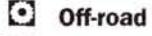
Concrete



Outdoor



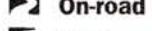
Asphalt



Off-road



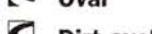
Minis & Micros



On-road



Oval



Dirt oval



Carpet

On-site hobby shop

AC power

Auto lap counting

Food available

Back Track Raceway, Hammonton, New Jersey 08037; Bob W., 609-214-5016



Checkerboard Raceways, Elwood, New Jersey 08217; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net



Family Hobbies Raceway, Vineland, New Jersey 08360; Linda Vogel, 856-696-5790; email: familyhobbies@yahoo.com; web: familyhobbiesraceway.com



Jackson RC Club, Jackson, New Jersey 08527; Al Sardano, 908-770-7621; email: njeyeguy@jacksonrcracing.com; web: www.jacksonrcracing.com



Jefferson Speedway, Oak Ridge, New Jersey 07438; Jim, (973) 697-7525



Millville R/C Oval & Roadcourse, Millville, New Jersey 08332; William Denstoz, 856-327-4640



PottBelly's R/C Speedway, PittsGrove, New Jersey 08360; Drew Anastasio, 856-207-2495; email: pottbelly@pottbellys.com; web: www.pottbellys.com



South Jersey Cost Controlled Racing, Sicklerville, New Jersey 08081; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net; web: www.sjccr.com



SpeedPro Dragway, Elizabeth, New Jersey 07206; Albie Niziolek, 908-351-5080; email: funnycar176@aol.com; web: www.speedpro.org



The Race Place, Farmingdale, New Jersey 07731; John Fary, (908) 938-5215



Trax70, Browns Mills, New Jersey 08015; Patrick Uket, 201-563-8000; email: patrick@obassey.com; web: www.Trax70.com



Wacky RC Raceway, Roselle, New Jersey 07203; Tony Williams or Kimble Wright, (908) 241-6700



NEW HAMPSHIRE

Hill Top R/C, Troy, New Hampshire 03463; Pete Boston/Jim MacPherson, 603-242-3222; email: hilltoprc@metryders.com; web: www.hilltoprc.com



Lakes Region R/C Speedway, Gilford, New Hampshire 03246; Louie Blais, 603-524-2909; email: racing@lakesregionrc.com; web: www.lakesregionrc.com



RT 106 Racepark, Pembroke, New Hampshire 03275; David Daniels, 603-224-7223; email:

david@collectracing.com; web:

www.106racepark.com



NEW JERSEY

Americana Hobby Center Inc., North Bergen, New Jersey 07047; John Many, (201) 662-0777; web: www.ahc1931.com



NEW YORK

(CR R/C Racers) Capital District Radio Controlled Stock Car Club, Nassau, New York 12123; Kirt Coonradt, 518-766-0029; email: cdfrcsc@hotmail.com; web: http://cdfcracers.50megs.com/



BarnStormers RC Raceways, Chester, New York 10918; Lou Sytsma, 845-469-BARN(2276) o; email: iamsytsma@hotmail.com; web: www.barnstormersrc.com



Brennan's RC Hobbies, Vernon, New York; Bill or Tom Brennan, (315) 829-4930



Brooklyn Hobbies, Brooklyn, New York 11234; Richie Siriano, 718-951-2500; email: brooklynhobbies@aol.com; web: www.brooklynhobbies.com



Chatham R/C Raceway, Bear Creek, North Carolina 27207; Dwight Fields, (919) 898-4518; email: crcrc@wave-net.net



R.C.R. Speedway, Salisbury, North Carolina 28147; Ronnie Linker, (704) 637-2565



Race City Motor Speedway, Mooresville, North Carolina 28115; Ray Kelly, 704-660-FAST; email:

Bruckner Racing, Bronx, New York 10465; Thomas Baffers Sr., (800)-288-8185



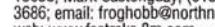
Chipmunk Hill R/C Speedway, Theresa, New York 13691; Ted or Pete House, (315) 628-5065



Competition Hobby Supplies & Speedway, Cohoes, New York 12047; Howie Cummings, 518-786-3622; email: howie.cummings@verizon.net; web: www.competitionhobbyssupplies.com



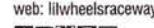
Fastraks, Hogansburg, New York 13655; Mark Castonguay, (518) 358-3686; email: froghobb@northnet.org; web: www.fastraks.8m.com



Hobby Zone Raceway, Ozone Park, New York 11417; Brian, Sean or Adam, (718) 641-9001; email: moonchaserwolf@aol.com



Lil Wheels Raceway, Oswego, New York 13126; Bill Meyer, 433-6566; email: lilwheelsraceway@hotmail.com; web: www.lilwheelsraceway.tsx.org



Long Island Raceway, Farmingdale, New York 11735; James, (516) 845-7223; web: www.raceway.com



PRO Speedway, Cattaraugus, New York 14719; Marc Pritchard, (716) 257-3101



Racing City Hobbies & R/C Raceway, South Glens Falls, New York 12803; Ken Taylor, 518-792-7272; email: racingcity@verizon.net; web: www.racingcity.com



Radio Hill Raceway, Dundee, New York 14837; Bill or Greg, 607-243-8641 (Bill);



Rampage R/C & Hobbies, Hyde Park, New York 12538; Brian Walker, (845) 229-1379



South Shore Hobby & Raceway, Coram, New York 11727; Benny or Bonnie, 631-696-8500; email: southshorehobby@iony.com



Southern Tier Raceway, Owego, New York 13827; Anita Harding, (607) 687-5395



TARMAC Ultimate R/C Raceways, Poughkeepsie, New York 12603; Todd Plas, 845-342-5409(Todd); email: toddp@tarmacraceway.com; web: www.tarmacraceway.com



Walt's Hobby, Syracuse, New York 13209; Bruce, 315-453-2291; web: www.walts-hobby.com



Willis Hobbies R/C Speedway, Mineola, New York 11501; Ken Ford, 516-463-3944; web: www.willishobbies.com

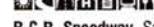


NORTH CAROLINA

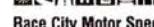
Antique Barn & Hobby Shop, Wilson, North Carolina 27893; Steve, (252) 237-6778; email: antiquebarn@earthlink.net; web: www.theantiquebarn.net



Chatham R/C Raceway, Bear Creek, North Carolina 27207; Dwight Fields, (919) 898-4518; email: crcrc@wave-net.net



R.C.R. Speedway, Salisbury, North Carolina 28147; Ronnie Linker, (704) 637-2565



Race City Motor Speedway, Mooresville, North Carolina 28115; Ray Kelly, 704-660-FAST; email:



Kellyrcms@cs.com; web: racecitymotorspeedway.com



Rosewood RC Speedway, Goldsboro, North Carolina 27530; Glenn Elam, 919-734-7754; email: gelam49@hotmail.com; web: www.glennewshobbycorner.com



Sandhills Raceway, Southern Pines, North Carolina; Mike Russell, 910-245-4450; email: mmrcc@mindspring.com; web: www.sandhillsraceway.com



Southern R/C Motorsports Club, Shallotte, North Carolina 28459; Chris Dixon, (910) 754-6315; email: nohope@atmc.net

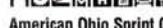


Xtreme Dirt RC Raceway & Xtreme On-Rd Raceway, Kannapolis, North Carolina 28083; Chris Lyster-Xtreme Hobbies, Inc., 704-933-5321; email: thehobbyshop02@aol.com



OHIO

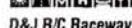
AK Hobby & Raceway, Cincinnati, Ohio 45211; Tim Tolle, (513) 661-7080; email: tim@akhobby.com; web: www.akhobby.com



American Ohio Sprint Car Association, Wickliffe, Ohio 44092; Gary Waldheim, 440-944-9966; web: www.aosca.8m.com



Black Swamp RC Car Club, Toledo, Ohio 43623; Riders Hobbies, 419-843-2931; email: ridersrcclub@webtv.net; web: www.blackswamprc.cjb.net



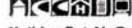
D&J R/C Raceway, Orrville, Ohio 44667; Don, (330) 682-4266



DeFossi Raceway, Ripley, Ohio; Greg DeFossi, (937) 377-2063



Hobbyland Raceway, Proctorville, Ohio 45669; Craig Harber, 740-886-0502 or 740-886-0501; email: pitroweracing@webtv.net; web: www.hobbylandraceway.homestead.com



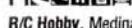
Mid Ohio Dirt Oval, Lexington, Ohio 44904; D&D Hobby Center, (419) 884-0001



Nothing But Air R.C. Track, Logan, Ohio 43138; Gary Lloyd, 740-385-0288



Ohio Valley OffRoad R/C Raceway, Jerusalem, Ohio 43747; Kevin Wilson, (740) 926-1738; email: consol@1st.net; web: www.ovr.8m.com



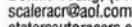
Outlaw Speedway, Lexington, Ohio; Eric Radio, 419-884-0001; email: kramerjc@aol.com; web: rcdirtoval.freeservers.com



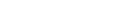
R/C Hobby, Medina, Ohio 44256; Chris Kohout, 330-723-0255; email: kohouty@aol.com



Raceway 42, Mansfield, Ohio 44905; Chris Cates, 419-589-4173; email: mopar340v8@aol.com; web: www.Raceway42.itgo.com



River Rat Racing, Ripley, Ohio 45167; Jon Faris, 937-392-9298; email: honey3@bright.net; web: www.riverratraceway.com



T.S.R.C.A.R., Hamilton, Ohio 45011; Dennis Young, (513) 367-5634; email: scalerao@aol.com; web: www.tristatecautoracers.com

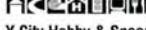
TARCAR, Toledo, Ohio 43617; Bill Bridges, (419) 826-3859



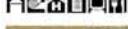
Ultra Racing R/C Hobby and Track, Hamilton, Ohio 45015; Ed Lewis, 513-863-7342; email: UltraRacing@aol.com; web: UltraRacing.com



Van Wert R/C Raceway, Van Wert, Ohio 45891; Mark Davis, (419) 232-2112



Y-City Hobby & Speedway, Zanesville, Ohio 43701; Kevin McKenna, (740) 455-3025; email: Kevin@ycity-hobby.com; web: www.ycityhobby.com

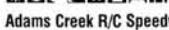


OKLAHOMA

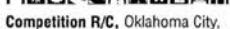
Action Hobbies, Tulsa, Oklahoma 74145; David Cole, (918) 663-8998; email: acthobby@aol.com



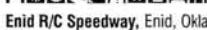
Action RC Speedway, Oklahoma City, Oklahoma 73135; Jerry Hawthorne, (405) 670-7770; email: ginna-hawthorne@cox.net; web: www.action-rc.com



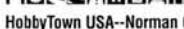
Adams Creek R/C Speedway, Broken Arrow, Oklahoma 74014; John Beigle, (918) 355-1416



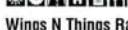
Competition R/C, Oklahoma City, Oklahoma 73149; James or Louise Brown, (405) 634-0809; email: compc1@aol.com



Enid R/C Speedway, Enid, Oklahoma 73703; Darin Pendleton, (580) 554-9400; email: darin@enid.com; web: www.enidrcracing.com



HobbyTown USA-Norman OK, Norman, Oklahoma 73072; Todd Jenson, (405) 292-5850

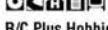


Wings N Things Raceway, Tulsa, Oklahoma 74105; Heath Anderson, (918) 745-0007

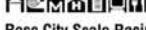


OREGON

Competition Racing Association, Portland, Oregon 97230; Mark Taylor, Pres., 503-761-1334; email: mark@crca-news.com; web: crca-news.com



R/C Plus Hobbies Raceway, Salem, Oregon 97302; Ron Smith, (503) 364-9188; email: rcpplus@rcplus.com; web: www.rcplus.com



Rose City Scale Racing, Portland, Oregon 97201; Dominic, 503-484-8887; email: dominic@rc-cars.com; web: www.rc-cars.com



PENNSYLVANIA

Altoona RC Raceway, Altoona, Pennsylvania 16602; Chuck or Doug Meyers, (814) 944-1200; email: altoonaraceway@yahoo.com; web: www.altoonaraceway.com



Bumps & Jumps RC Speedway, Etters, Pennsylvania 17319; Chris McKinney, 717-932-3000; email: bumpsandjumps@comcast.net; web: http://www.bumpsandjumps.com



DC Ultra Trax, Warminster, Pennsylvania 18974; David Cowan, (215) 672-5200; web: www.jcrcobbies.com



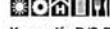
Dirtburners Club sponsored by Schmidt's Hobby, Windber, Pennsylvania 15963; Bruce Schmidt, (814) 266-4118; email: rcman@floodite.net; web: www.rcman.net



Dreamboat Hobbies, Warren, Pennsylvania 16365; Lulu Dussia, (814) 723-8052; email: dreamboat77@yahoo.com; web: www.dreamboathobbies.com



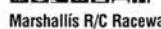
J&K Hobbies and Raceway, Jersey Shore, Pennsylvania 17740; Shawn Winter, 570-398-8171; email: romani-ac01@msn.com; web: www.JandKHobbies.com



Kranzelis R/C Raceway & Hobbies, Lemoyne, Pennsylvania 17043; David or Stuart Kranzelis, (717) 737-7223; web: www.kranzelisrcobbies.com



Little Plum R/C Hobbies, Lock Haven, Pennsylvania 17745; Larry Duck, (570) 769-1984



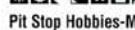
Marshallis R/C Raceway, Honesdale, Pennsylvania 18431; Bill or Dot Marshall, (570) 729-7458



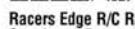
McCullough's Offroad, Sarver, Pennsylvania 16055; Doug McCullough, (724) 352-0116; email: dmccull323@aol.com; web: www.mcculloughsoffroad.com



Newville RC Speedway & Hobbies, Newville, Pennsylvania 17241; Randy or Mike, 717-776-5568; email: newvillercspeedway@yahoo.com; web: www.newvillercspeedway.com



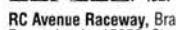
Pit Stop Hobbies-Mount Joy, PA, Mount Joy, Pennsylvania 17552, (717) 653-6222; email: pitstopobbies@pitstopobbies.net; web: www.pitstopobbies.net



Racers Edge R/C Racing & Hobbies, Smethport, Pennsylvania 16749; Rick Morgan or Johna Simar, (814) 887-9256; email: postmaster@racersedgegcr.com; web: www.racersedgegcr.com



RB Motorsports & Hobby, Northumberland, Pennsylvania 17857; Rick Bunting, (570) 473-8711



RC Avenue Raceway, Bradenville, Pennsylvania 15650; Stan Vensel, 724-396-7628; email: mrmud@kiski.net



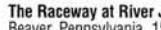
RC Outfitters, Hanover, Pennsylvania 17331; Chris Shaffer, (717) 633-9490; email: thestore@rcobbies.com; web: www.rcobbies.com



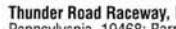
Riverside Raceway, Warren, Pennsylvania 16365; Jeff, (614) 723-4211



Staub Bros. R/C Speedway, Gettysburg, Pennsylvania 17325; Todd or Scott Staub, 717-334-8488; web: www.staubbrothers.com



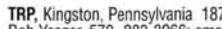
The Raceway at River Junction, Beaver, Pennsylvania 15009; Sam or John, (724) 728-5571; email: riverjct@stargate.net



Thunder Road Raceway, Limerick, Pennsylvania 19468; Barry or John, 610-831-8898; email: xslotgodx@aol.com; web: www.towbarrc.com



Trains & Lanes Raceway, Easton, Pennsylvania 18045; Jeff Setzer, (610) 253-8850 or 8; email: trainslanes@aol.com



TRP, Kingston, Pennsylvania 18704; Rob Yeager, 570-283-3066; email: rcr99@aol.com



Washington RC Raceway, Washington, Pennsylvania 15301; Aaron Stimmell Jr., 724-228-8396



WillCam Raceway, Punxsutawney, Pennsylvania 15767; James Campbell, (814) 939-4251



PUERTO RICO

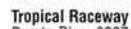
Bayamon R/C Park, Bayamon, Puerto Rico 00956; Damian Cruz & Javier Rivera, (787) 869-8092 & 401; email: damian@bayamonrcpark.com; web: www.bayamonrcpark.com



Hi-Speed C Raceways, San Juan, Puerto Rico 00926; Carlos Ortiz, (787) 283-0198; email: hispeed@hotmail.com; web: www.hispeedhobby.com



Mech Tech Touring Park, Caguas, Puerto Rico 00725; Humbert (Tito) Lizardi, (787) 739-1572; email: tlizardi@hotmail.com

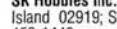


Tropical Raceway Track, Manati, Puerto Rico 00674; Hector Pabon/George Pabon, 787-785-9529; email: tropohobb@coqui.net; web: www.tropohobby.com

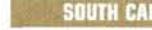


RHODE ISLAND

Insane Track, Cranston, Rhode Island 02907; Jose Jimenez, 401-467-8878; email: chevygo8@aol.com; web: www.insanehobbies.homestead.com

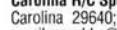


SK Hobbies Inc., Johnston, Rhode Island 02919; Slim or Keith, (401) 453-1440



SOUTH CAROLINA

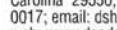
Atomic Racers, Aiken, South Carolina 29803; John Felak, 803-642-0314; web: http://AtomicRacers.tripod.com



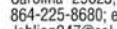
Carolina R/C Speedway, Easley, South Carolina 29640; David, 864-295-1209; email: cprahlr@ mindspring.com; web: www.carolinarc.com



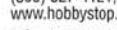
Darlington R/C Raceway at Hobbies & More, Darlington, South Carolina 29532; Jerry Pollard, (843) 393-0355; web: www.hobbiesnmore.com



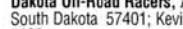
DirSlingeris, Hartsville, South Carolina 29550; Don Dietz, 843-383-0017; email: dshobbiesdon@aol.com; web: www.dands-speedway.50megs.com



Hi Voltage Raceway, Anderson, South Carolina 29625; Whitner Bowen, 1-864-225-3680; email: jahllion27@aol.com



The Grove Racing Center, Rockhill, South Carolina 29730; Don Faris, (803) 327-4121; web: www.hobbystop.com



SOUTH DAKOTA

Dakota Off-Road Racers, Aberdeen, South Dakota 57401; Kevin, 605-225-5223



Grassland Racers, Black Hawk, South Dakota 57718; Ryan Logan, (605) 787-5632



Triple B, Winner, South Dakota 57580; Broc Stout, (605) 842-2699

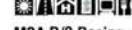


TENNESSEE

Hobby Town USA, Franklin, Tennessee 37067; Bucky Mills, (615) 771-7441; email: htu126@aol.com



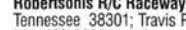
Mid-South Racing Association, Memphis, Tennessee 38133; Michael Feliciano, 901-268-7969; email: michael.feliciano@expeditors.com; web: www.msra-racing.com



MSA R/C Racing, Crossville, Tennessee 38555; D.R. Findley, (931) 456-0027



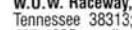
Need for Speed Raceway R/C, Chattanooga, Tennessee 37415; Ronnie Cox, (423) 876-9019



Robertson's R/C Raceway, Jackson, Tennessee 38301; Travis Robertson, 731-423-6984; email: RobertsonsRC@aol.com



SpeedZone Raceway Park, Athens, Tennessee 37303; Mike Henderson, 423-744-8358; email: speedzon@msn.com; web: www.speedzonercway.com

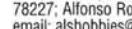


W.O.W. Raceway, Beech Bluff, Tennessee 38313; Brad Jones, 731-427-1625; email: wowracer@charter.net; web: go.to/wowracing

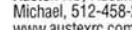


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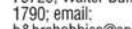
215 Speedway, Abilene, Texas 79602; Clyde Gardner, (915) 673-2351



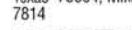
Ali's Hobbies, San Antonio, Texas 78227; Alfonso Robles, 210-645-1050; email: alishobbies@usa.com; web: www.alishobbiesusa.com



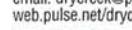
Austex RC, Austin, Texas 78757; Michael, 512-458-2324; web: www.austexrc.com



B&B R/C Hobbies, Big Spring, Texas 79720; Walter Bumbulis, (915) 263-1790; email: b;brchobbies@apex2000.net



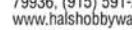
Big Mike's R/C Raceway, Longview, Texas 75604; Mike Sumrow, 903-297-7814



Drycreek Raceway, Greenville, Texas 75402; Micki Alpha, 903-527-5381; email: drycreek@pulse.net; web: web.pulse.net/drycreek



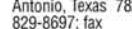
Finishline Raceway, Hurst, Texas 76053; Damon Darnall, (972) 404-0463; email: Finishline@ev1.net; web: http://users.ev1.net/~finishline/Index.htm



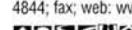
Halis Hobby Raceway, El Paso, Texas 79936; (915) 591-2213; web: www.halishobbywarehouse.com



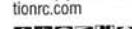
Hobby Center Race Track, Houston, Texas 77598; Issac Ben-Ezra, 281-488-8697; email: hobbycenter@issac-smmodels.com; web: www.hobbycenter.cc



Hobbytown USA-San Antonio TX, San Antonio, Texas 78209; Clark, (210) 829-8697; fax



Indy R/C World, Garland, Texas 75041; Steve Webster, (972) 271-4844; fax; web: www.indyrcworld.net



Js Action R/C, Pasadena, Texas 77504; Jack Williams, 713-946-8888; email: jactractionrc.net; web: www.jsactionrc.com



K&M Racing, New Caney, Texas 77357; Brent Mahaffy, (281) 399-9777



M&M Hobby Center, Bellaire, Texas 77401; Meni Ben-Ezra, 713-661-7137; email: mmhobby@mmhobby.com; web: www.mmhobby.com



MBRC, Dallas, Texas 75093; Mike Battile; email: info@mbracing.com; web: www.mbracing.com



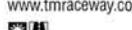
Mike's Hobby Shop Superstore & Raceway, Carrollton, Texas 75006; 972-242-4930; email: mike@mikeshobbyshop.com; web: www.mikeshobbyshop.com



Reflex R/C, Houston, Texas 77055; Joseph Chen, (713) 464-4458; web: www.reflexrc.com



T&M Raceway R/C Drag Racing, Addison, Texas 75244; Marvin Jackson, (972) 416-0445; email: mjackson@tmraceway.com; web: www.tmraceway.com



T&T R/C Cars, Plano, Texas 75024; Joe Sullivan, (972) 633-2470



The Rollcage, Greenville, Texas 75402; Guy Allen, (903) 883-0332; email: rollcage2000@therollcage.com; web: www.therollcage.com



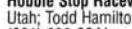
Thompson's RC Raceway, Lufkin, Texas 75901; Mark Thompson, (936) 637-0093



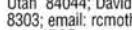
W.E.S. Hobby Race, Beaumont, Texas 77701; Marty Walker, (409) 839-4929



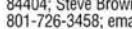
X-Treme Hobbies, Round Rock, Texas 78664; Jeff Santos, (512) 310-0444 or (5



Outback Raceway, Ogden, Utah 84404; Steve Brown or Beazer Martin, 801-726-3458; email: Steve@rrmcr.com or Beazer@bbibbs.com; web: www.rmrccr.com or www.beazershobbies.com



Vision Hobby, Orem, Utah 84057; Ken Rice, (801) 226-6226



VERMONT
Empire Hobbies Off-Road Raceway, Saint Albans, Vermont 05478; Scott or Jen, 877-446-2243; email: empirehobbies@adelphia.net; web: www.empirehobbies.com



R/C Toy Box Hobbies & Tracks LLC, Saint Johnsbury, Vermont 05819; Raymond Richard, 802-748-1030; email: ray@rctoybox.com; web: www.rctoybox.com



Bradis Hobbies, Staunton, Virginia 24401; Brad, (540) 885-3642; email: brad@bradhobbies.com; web: www.bradhobbies.com



VIRGINIA
Dirtn

Brown Brothers Hobbies, Dumfries, Virginia 22026; Joe or Bob Brown, 703-221-5746; email: joe@bbhobbies.com; web: www.bbobbies.com



Cooper's Radio Control Race Center Inc., Chatham, Virginia 24551; Norris L. Cooper, 434-724-4182; email: ncooper@earthlink.net; web: www.coopersrc.com



DRCW Raceway, Virginia Beach, Virginia 23454; Les Modlin, 757-340-6681; web: www.debbiesrcworld.com



Hampton Roads R/C Drag Club, Virginia Beach, Virginia 23452; Garry Nelson, 757-399-8645; email: Garry@gsdragracing.com; web: www.HRRCDC.com



KCis Radio Control & Repair, Lynchburg, Virginia 24503; Curtis or Kim Wright, (804) 384-8596



Linville Hobbies Raceway, Linville, Virginia 22834; Jason or Jerry Shenk, (540) 833-2222; email: linvillehobbies@juno.com; web: www.linvillehobbies.com



Olde Towne Hobby Shoppe, Manassas, Virginia 20110; Jeff Gough, (703) 369-1197; web: www.ManassasHobby.com



Roanoke R/C Club, Salem, Virginia 24153; Chad Trent, 540-314-6257; email: roanokerc@dooleyprinting.com; web: roanokerc.cjb.net



Shamroc Raceway, Winchester, Virginia 22601; Charlie Greathouse, 540-678-8878; web: www.shamroc.homestead.com/front-page.html



Stream Hobby Shop, Newport News, Virginia 23605; Rusty Kennedy, 757-591-0700; email: stream.hobbyshop@verizon.net; web: streamhobbyshop.com



The Tilt Yard, Dayton, Virginia 22821; Homer, 540-828-3476; email: homer@tiltyard.com; web: www.tilt-yard.com



Thunder Road RC Speedway, Gordonsville, Virginia 22947; Robert Bingler, 434-296-6549; email: tripod@thunderroadrc.com; web: www.thunderroadrc.com



Tidewater R/C Speedway, Inc., Hampton, Virginia 23663; Jim Pike, Rob Marsette, Dave Pritchard, (757) 723-8927; email: zeey31@hotmail.com



A-Main Raceway, Vancouver, Washington 98685; Monty Coleman, (360) 571-8404; web: www.amainraceway.com



WASHINGTON

KEY TO SYMBOLS

Indoor

Outdoor

Off-road

On-road

Oval

Dirt oval

Carpet

Concrete

Asphalt

Minis & Micros

On-site hobby shop

AC power

Auto lap counting

Food available

WEST VIRGINIA

Burr Fab R.C. Raceway, West Union, West Virginia, 26456; Mark Travis, 304-873-2487; email: burrhouse1@cs.com



Fulton's R/C Raceway, Wheeling, West Virginia, 26003; James Fulton, (304) 233-5355



Mountwood Raceway, Vienna, West Virginia, 26105; Tom Allen, 304-295-3234; email: ray@ovrccc.com; web: www.ovrccc.com



Quiet Dell Raceway, Fairmont, West Virginia, 26554; Darris, (304) 366-1441; email: Tateracing@aol.com



WISCONSIN

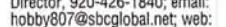
ABC R/C Inc & Raceway, Waukesha, Wisconsin, 53186; Dick Mathiesen, 262-542-1245; email: Help@abcrchobby.com; web: www.abcrchobby.com



Gary's Hobby Center, Racine, Wisconsin, 53403; Bill Phalen, 262-554-8884



Hobbytown Oshkosh-The New Revolution Raceway, Oshkosh, Wisconsin, 54901; Bill Magritz-Race Director, 920-426-1840; email: hobby807@sbcglobal.net; web: www.hobbytownoshkosh.com



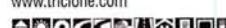
KDM Hobby & Raceway, Abbotsford, Wisconsin, 54405; Kevin Michig, 715-223-4414; email: kdmhobby@charter.net; web: www.kdmhobby.homestead.com/kdmhobby.html



MARCCA Raceways, Poynette, Wisconsin, 53955; Don Hartley, 608-243-1778; email: hotrodcharley@aol.com; web: www.marcca.com



Mid-West Tri-Clone/Tri-Clone OffRoad, West Bend, Wisconsin, 53095; Dave Hilpert, 262-334-0429 or 262-; email: mwvtc@inet.com; web: www.triclonerace.com



Oshkosh RC, Oshkosh, Wisconsin, 54902; Bob, 920-426-1840; email: hobby807@sbcglobal.net; web: www.hobbytownoshkosh.com



Pro-Star Racing, Green Bay, Wisconsin, 54301; Chuck or Randy, Chuck-920-494-1233/R; web: www.prostarracing.com



S&Nis Trackside Hobbies and Raceway, Milwaukee, Wisconsin, 53005; Scott Ernst, 262-783-4699; email: sernst@trackside.com; web: www.trackside.com



The Shorthalf Raceway, Eau Claire, Wisconsin, 54701; Scott Schoettle, 715-838-8350; email: Scottschoettle@mcleodusa.net



WYOMING

Xtreme Hobbies & Raceway, Gillette, Wyoming, 82718; Krieg Balls, 307-682-6077; email: xtremeraceway@collinscom.net



ARGENTINA

Circuito R/C Lobos, Lobos, 7240; Rupert Bruce, 54-02227-422905; email: rclobos@yahoo.com; web: www.rclobos.8m.com



Circuit M.R. Models, Buenos Aires 1428; Maximiliano Roballos, 54 11 4557 1000, fax: email: info@kyoshi-argentina.com.ar; web: www.kyoshi-argentina.com.ar



Club A. Velez Sarsfield, Buenos Aires; Jorge Herrero, 54-01-658-5851



AUSTRALIA

A.C.T. Model Car Racing Club, Wanniassa; Gary Davey, 61-6-28714111



A.C.T. Remote Control Car Club, Kambah; Rob Jorgensen, 61-2-6231-9925; email: bjorgo@industry.gov.au; web: www.actrccc.com



Aubry R/C Car Club, Aubry 2640; Ron Langman, 060-247-128



Brisbane Dirt Racing, Brisbane 4053; Jeff Chandler, 07 3355 7476, 041 8; email: bigfix@bigpond.net.au; web: www.users.bigpond.net.au/bigfix



Canberra Off Road Model Car Club, Queanbeyan 2902; Graham Brown, 02 6241 3070; email: gbrown@webone.com.au; web: www.webone.com.au/~gbrown/mrcc/index.html



Canberra Off-Road Model Car Club, Narrabundah, 2604; Graham Brown, 61-2-241-3070



Carine R/C Model Car Club, Inc., Greenwood; Mitchell Davies, 0418 955 981; email: 13davies@iinet.net.au



Castle Hill Radio Control Off Road Car Club, Castle Hill, 2754; Peter Ellis, 0412 257 353; email: chrcorcc@next-century.com.au; web: www.2.nextcentury.com.au/chrcorcc



Central Coast ORRCC, Bateau Bay 2261; Peter J. Knight, 61-43-693-698



Illawarra RCECC, Albion Park Rail, 2527; Mel or Andrew, 042-714-683



Lakeside R/C Racing Car Club, Lansvale 2166; R. Bartolozzi, 62-2-907-9800



Melton Electric Circuit Car Association, Melton 3337; Arthur Joslin, 61-3-9747-8805



NSW Indoor R/C Raceway, Hurstville 2220; Anthony Lee or Walter Ly, 02-9585-8810



Penfield Park, Adelaide 5108; Trevor Unew South Walesorth, (618) 8289-5010



R.C. Speedway, Newcastle 2300; Andrew Dillon-Smith, 02-49265966



TFT - Templestowe Flat Track Racers, Templestowe 3106; Nigel George, see website; email: tft@imagefile.net; web: drive.to/tft



The Bayside Raceway, Brisbane 4178; Nigel Bell, 07 3893 1864; email: mwr1@dingoblu.net.au



Victorian Radio Control Drag Racing Association, Melbourne 3940; John de Tracy, +61 03 59867509; email: bjrn1@hotmail.com; web: www.ozemail.com.au/john59/index.html



Wee Waifs Offroad RC, Burrun Junction 2386; Shane, 61-02-6796-1339



Wodonga R/C Car Club, Wodonga 3690; Paul Townsend, 02-6056-0706; email: townsend175@ozemail.com.au



AUSTRIA

RMC-Wien, Vienna A-1220; Herbert Holze/Martin Hrzak, +43-664-4730376



BARBADOS, WEST INDIES

R.O.A.R. (Radio Operated Auto Racing), St. Michael; Marva Clarke, (246) 427-3907



BELGIUM

ATR-Alka-Tele-Racing, Limburg; Alken, 0032-11-25-49-03



MBV-Kampenhout, Kampenhout B1910; Frank Mostrey, 0-16-65-75-18



Model Racing Club Oudenaarde (MRCO), 9700 Oudenaarde; Nicky Delmote, and fax: 32 55 30 36; email: mrco_racing@hotmail.com; web: mrco-racing.tripod.com



MRCZ, De Burg; Montie, 75-71-63



R.C.R., Retie 2470; A. Eelen, 32-14-379685



BRAZIL

AGARC AssociaÃ§Ã£o do Goiana de Automodelismo Radiocontrolado, Aparecida de GoiÃ¡nia 74980-070; Zeca, Carol, Warner or Rodrigo, 062 9979 9009; email: zeca.net@terra.com.br



Amoc CassocciaÃ§Ã£o de Modelismo B. Camboriu, Bal. Camboriu 88.330-000; Leo Cesar, (047) 366-0001



Brasilia R/C Motor Circuit, Brasilia 70000; Alexandre (Alex), 55-061-273-7205



C.A.A.R. Curitiba AssociaÃ§Ã£o de Automodelismo Radiocontrolado, Curitiba, 82650-530; Ronaldo Assumpcao, 55-41-354-2804



Electric Car Club R/C Santos, Santos 11065-001; Estevam or Arnaldo, 55-013-232-2536



Hobby Center, Brasilia 70.273, 061-242-0488



Hobby Planet Racing Club, Campinas 13091901; Daniel, Helio, Luciano, 019 258 2768



Jungle Drive, Rio de Janeiro 21940-490; Paulo Brito, (021) 396-0851 or (0



Off Roaders, Sao Paulo 05640; Waldir Ielpo, (055) 011-260-5628;



CANADA

C.A.R.C.A.R., Calgary; Kerry Nevatte, 403-630-8852; web: www.carcar.ca



Cactus Speedway, Kingsville N9Y 2V6; Bob Tanner, 519-326-3176; email: khunter@sparcracers.com; web: www.sparcracers.com



Cam R/C, Coquitlam V3E 1K9; Roger Brown, 604-945-3888



Circuit J.C., St. Polycarpe JOP 1X0; Jean Castellon, 450-265-3675



Circuit Teleguide ST Roch, ST Roch De L' Achigan JOK 3H0; Gerald Beauchamp, 450-588-4254; email: info@grcsr.com; web: www.grcsr.com



KEY TO SYMBOLS

- Indoor
- Outdoor
- Off-road
- On-road
- Oval
- Dirt oval
- Carpet

- Concrete
- Asphalt
- Minis & Micros
- On-site hobby shop
- AC power
- Auto lap counting
- Food available

Copetown Raceway, Copetown; Adam Filipowicz; email: adamfilip@home.com; web: copetown-raceway.8k.com



Dirt City RC, Albany, Oregon 97321; Doug Vertrees, (541) 791-1089; email: quicktemperrc@aol.com



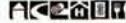
Dynamic Hobbies, Nepean K2E7S4; Fred Zufelt, (613) 225-9634



HobbyHobby P.L.R.C., Mississauga L5M 1K8; Tom Bakonyi, 905-858-7978; email: info@hobbyhobby.com; web: www.hobbyhobby.com



Honda House Motor Speedway, Chatham N7M 1P9; John Elliot, (519) 354-5530



Importations Louis Durand, Saint-Jean-Baptiste-de-Nicolet J3T 1E5; Louis Durand, (819) 293-6097; email: lidurand@sogelco.net; web: public.sogelco.net/lidurand/



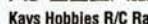
IROC, Victoria V9B 5W9; Daryl Jones, (250) 478-8013; email: djones@shaw.ca; web: http://www.iroc.ca



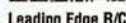
Johns Jump & Grind R/C Track, Waterville BOP 1V0; John Egan, 902-538-8920; email: john.egan@ns.sympatico.ca; web: www.jjgrc.com



J-T International Raceway, Napanee K7R 8A1; N. O'Neill, (613) 354-0099



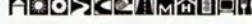
Kays Hobbies R/C Raceway, Moorefield NOG 2K0; Doug Kay, 519-638-9990; email: doug@golden.net; web: www.kayshobbies.place.cc



Leading Edge R/C Speedway, Kingston K7M 3Y5; Mike and Tony Daicar, 613-389-4878



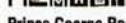
Mid-Canada R/C Auto Racing, Winnipeg R2J 4E6; Boyd Chwartacki, 204-444-4230; email: midcanardarc@mts.net; web: www.mid-canadarcautoring.com



Miniatures & Passions, Ste. Therese J7E 2B4; Gilles Lachance, (450) 979-7989



Mini-Z Hobby Shop, Markham L3R 224; Brian Pong, (905) 940-0898; email: info@minizhobbyshop.com; web: www.minizhobbyshop.com



Prince George Radio Controlled Car Club, Prince George V2M 5R9; Doug Waller, 250-561-0035



R/C Champ Raceway, Scarborough M1H 3A4; Ben, Matthew or Louie, (416) 289-8717; web: www.rccamp.com



R/C Fanatic de la Capitale, Charlesbourg G1G 3Y4; Marc Page (Club President), 418-265-2678; email: infos@rcfanatic.com; web: www.rcfanatic.com



Recreation R/C Raceway, Prince George; Doug Waller, (604) 561-0035



Steeltown Speedway, Binbrook L0R 1C0; Trevor Harrison, 905-692-3407 (ask fo; email: the_prodigy@zdne-tonobox.com; web: www.geocities.com/s_speedway



Sudbury Organized Auto Racing, Val Caron P3E 1E6; Brad Peacock, 705-897-1435(Brad); email: soarsud-bury1@hotmail.com; web: www.sudburyrc.no-ip.com



The All New R.C. World, Hamilton LOR 1W0; Dave, Larry or Brian, (905) 765-2301 or (9)



Thompson Valley R/C Raceway, Kamloops V2E 2K7; Brent Wende, (250) 372-2917; email: tvrcr@shaw.ca



Vancouver R/C Road Racers, Coquitlam V3E 1K9; Roger Brown, (604) 945-3888



CHILE

Nico Prohens Off/On Roaders, Ovalle 1; Nicolas Prohens, (56) 53-711579; email: nprohens@entelchile.net; web: 38939070.home.icq.com/



OFF/ON ROADERS, Santiago 1; Mauricio Wetter Ferrer, (56) 09-8404174; email: mwetter@entelchile.net; web: 38939070.home.icq.com/



COLOMBIA

Club De Automodelismo Colombiano, Sanatafe De Bogota D.C.; Jorge Delgado, 1-6130588



Garoso Raceway, Cucuta; Gabriel Rodriguez, 975-751892



COSTA RICA

Club de Automodelismo RC10 Costa Rica, San Jose; Osvaldo Averhoff A., (506) 2862353; email: nitrocr@hotmail.com



Hobbymania, Hispanidad San Pedro; Randall Jimenez, 506-280-9078; email: hobbymaniestore@hotmail.com; web: www.hobbymanias.com



CYPRUS

Racing Model Club, Nicosia; Andrea Sotiriou, 493186; fax 493229



DENMARK

Brondby Motor Club, Brondby 2605; Soren Boy Holst, 45-36-472-462



Holstebro R/C Buggy Club, Holstebro 2600; Michael Brusholt, 45-97-412-734



Klub 144 Raceway, Lyngby 2800; Henrik Carstens, 45-42-68-3691



Rainbow Raceway, Copenhagen 2600; P. Christiansen, 45-52-848-504



Thor Minirace Odense, Odense N° 5240; Ulrich Rasmussen, 45-65-303-707



DOMINICAN REPUBLIC

Adoca R/C Speedway, Santo Domingo, (809) 220-5266



La Barranquita R/C International Speedway, Santiago, (809) 582-2303

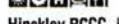


ENGLAND

Chessington Radio Car Club, Worcester Park; Ian Spiller, 0252-20657



Hampshire Racing Center, Basingstoke; Tony Eudola, 44-1276-61402



Hinckley RCC, Hinckley; Bruce, 01455-890580



Snetterton Market Model Car Club, Norwich NR16 2JU; Lee Shore, 01760 74857; email: kekezza@fsmail.net; web: www.wheelspins.co.uk



Worcester Model Car Club, St. Johns WR2 6Q9; Mr. Hardy



FRANCE

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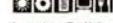
Auto Model Club de l'ouest, Lojerhet 29470; Peuziat Michel, 98071764



Crame Roncq, Mons el Baroeul; Michael Hondekin, 33-20042755



CSRM, Lyon 69009; Pierre-Yves Monfroy, 06 78880852



Lorgies Bolides, Lorgies 62840; Hourdequin Sabine



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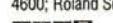
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Mini Car Club Dortmund, Dortmund 4600; Roland Schwan, 0231/213609



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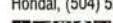


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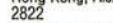
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Autodromo Accion, San Pedro Sula; Colonia Rivera Hernandez; Eduardo Hondal, (504) 52-2061

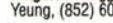


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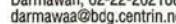


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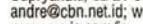


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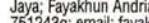
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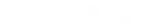


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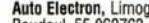


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Philippine R/C Association

Philippine R/C Association, Manila; Ronald/Manny Villaflor, 23-30-08

QCRCCC Quezon City Radio Control Car Club, Quezon City 1008; Desthy, Emer or William, 0917-8911698; email: emerito@quickweb.com.ph; web: www.qcrccc.cjb.net



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Frantic Raceway, Welkom; Wayne Roodt, 27-57-35-72849



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Grand Prix Electric Car Club, Boksburg; Gary Gibson, 27-11-826-1720



Helderberg Radio Control Car Club, Somerset West; Andre Hollander, 024-51-2865



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MERC Racing, Rustenburg 0300; Gerrie Pretorius, 014-5974569



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Parow Radio Control Car Club, Parow 7530; Craig, +27 21 919-5859; email: craig@kingsley.co.za; web: www.speedmodels.za.org



Phoenix Raceway, Stilfontein; Lionel Edwards, 018-4842863



Pick n Pay Model Car Club, Klerksdorp 2570; H. Grobiks, (27) 18 46245421



Pietersburg Model Racing, Pietersburg; Peter Van Vuuren, 0152-293-0700



Pretoria Model Racers, Pretoria; Deon Cerf, 27-083-630-2045; web: www.pretoriarmr.co.za



Pretoria Off Road R/C Club, Pretoria; Gert Swart, 012-377-3238



R.A.C.E. Off Road, Maraisburg; Derrick Plank, 682-2173



R.C. Superbowl, Elsburg; Karl Fawcett, 2711-9076145



Rustenburg Off-Roaders, Rustenberg; Jan Van Vollenhoven, 0142-24-846



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ADAM, Madrid; Alvaro Sarabia, 01-7471113



Club Modelismo Catilla, Burgos 09080; A.J. Pereda, 34-47-240130



Club Social Sevillana, Granada; Oscar Saenz, 958-275282



CRAEM, Madrid; Pablo Llorente, 91-3865952



Motoclub Castellon R.C., Castellon; Octavio Traver, (34) 64 229705, (34)



Outlaw-Ultima II, Madrid 28016; Juan Vacas, 915197298



SWEDEN

Amalie Racetrack, Sollentbrunn 5-46632; Tage Johansson



PROCAR Speedway, Vedde 430 20; Lars Nordin, 46-0-340-38784; fax; email: info@procars.se; web: www.procarse.se



Sollentbrunn Miniracing Club, Alingsas; Tage Johansson, 46-322-40944; email: Tage.j@swipnet.se



Staffanstorp Highway 1:8 Track, Staffanstorp 245 45; Birje Petersson, 46 0 46-256832



Torvinge raceway, rappested 59047 vikingstad; mats johnsson, 013-808445; email: mats.j@swipnet.se; web: drive.to/mirac



Touring 1:10 Raceway (& Mini-Z Raceway), Ronneby 372 35; Mikael Nilsson, +046 457 160 07; email: micke12@telia.com; web: drive.to/rrck



SWITZERLAND

E.M.B.C.M. Raceway, Seinen CH-8854; Markus Schmid, 41-1-8605229



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Outdoor

Asphalt

Off-road

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Oval

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Dirt oval

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ERMC Raceway, Grand-Saconnex 1218; M. Maurer, 19-41-22-798-9765



JMRCV-Terraindu Levant, Geneva 1290, fax 19 41 22 7790805



THAILAND

Hobbica Circuit, Plong Maduea, Maung 73000; Mr. Supakiet Thuwachardenpanich, 56-34-258808; email: hobbica@yahoo.com



Hot Rod Raceway, Bangkok 10310; Mr. Vichai Vongphate, (662) 8602922-5

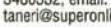


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Basket Otopark Raceway, Istanbul 81190; Kaan Ciftci, +90 (216) 3486332; email: taneri@superonline.com



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Santa Paula R/C Club, Caracas; Abecasis or Franco Agrusa, 02-2423954 or 02-451



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THE RULES

- » Total build time is measured from the moment the box is opened to the moment the completed car makes a lap from the conference room to the lobby and back.
- » The car must be complete; leaving parts off is a no-no.
- » The car cannot be turned on or run until it's on the test track. If something is messed up, the driver must return to the shop for repairs.
- » Quality counts; each car is judged for build quality, and seconds are added to the build time for poorly trimmed parts, loose screws, parts on backwards, etc.



Paul slaps in a Versa Pack and is ready to wrench. Meanwhile, Kev stocks his pit with food. He did it as a goof, but all the pretzels, Pop Tarts and Coke were gone by the time he wrapped up the build!

ON YOUR MARK, GET SET,

wrench!

All RC guys like to think that they're the best at building, but what about building for speed? When Paul and Kev got into a trash-talking showdown over who could build the best car the fastest, we knew that only a side-by-side assembly session could settle the argument. So here it is: the first-ever editor-versus-editor build-off!

THE KITS

Paul and Kev are both building Tamiya TT-01s. The latest version of this bomb-proof beginner car includes an excellent TEU-101BK reversing speed control. The guys completed their cars with identical Tamiya radio gear and DuraTrax 3300 stick packs that we charged before the build-off. Likewise, the bodies were painted before the wrench-race began. And what bodies they are—the Mercedes 190E Evo II AMG and the BMW M3 are classic Tamiya sedan shells from the dawn of the touring-car boom.



And ... begin! Kev is already down one Snapple.



Both guys went straight by the manual rather than assembly-lining the shocks and diffs.



click trip SEE TIME-LAPSE VIDEO OF KEV'S MERCEDES BUILD